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PROCEEDINGS: Fine Particle Emissions Information System User Workshop

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16. ABSTRACT

The proceedings document a User Workshop for the Fine Particle Emissions Information System (FPEIS), sponsored by EPA's Industrial Environmental Research Laboratory (IERL-RTP) and held June 15, 1976, at EPA's Environmental Research Center, Research Triangle Park, NC. Purpose of the Workshop was to introduce the user community to FPEIS. FPEIS is a computerized information system on fine particle emissions from stationary sources and may contain source test data including particle size distribution; chemical, physical, and bioassay testing results; design and performance data on particle control systems; process descriptions; and descriptions of the sampling equipment and techniques employed. The Proceedings contain the text of the Workshop presentations, as well as that of the discussion period following each presentation. The Workshop consisted of sessions on the background and purpose of FPEIS, the data base structure, the input data requirements, and the output formats.

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PROCEEDINGS:
FINE PARTICLE EMISSIONS INFORMATION SYSTEM USER WORKSHOP

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Washington, DC 20460

PREFACE

This report was prepared for EPA/IERL-RTP under Contract No. 68-02-1324, Task 46. The work was performed in the Environmental and Materials Sciences Division of Midwest Research Institute. Dr. L. J. Shannon served as project manager and Mr. M. P. Schrag, Head, Environmental Systems Section, was the project leader.

Approved for:

MIDWEST RESEARCH INSTITUTE

L. J. Shannon

L. J. Shannon, Director
Environmental and Materials
Sciences Division

January 26, 1977

FOREWORD

The U.S. Environmental Protection Agency, through the Industrial Environmental Research Laboratory-RTP, sponsored a User Workshop for the Fine Particle Emissions Information System. The workshop was held at the National Environmental Research Center, Research Triangle Park, North Carolina, on June 15, 1976.

The purpose of the workshop was to introduce the user community to the Fine Particle Emissions Information System (FPEIS). The FPEIS is a computerized information system on fine particle emissions from stationary sources and may contain source test data including particle size distribution; chemical, physical and bioassay testing results; design and performance data on particle control systems; process descriptions; and descriptions of the sampling equipment and techniques employed.

The workshop opened on Tuesday morning, June 15, 1976, with an official welcome by Dr. John O. Smith, Director of the Office of Program Operations, IERL-RTP after opening remarks by Gary L. Johnson, EPA Project Officer for the FPEIS.

Following the welcome, Mr. Johnson presented the background and purpose of the FPEIS. M. P. Schrag of Midwest Research Institute concluded the morning session with a description of the FPEIS data base.

The afternoon session began with a discussion of the FPEIS data input forms and content by Dr. A. K. Rao of Midwest Research Institute. Mr. G. S. McMahon of MRI Systems, Inc., and Dr. Rao discussed the data output, including both the standard output and several options available to the user. The workshop was summarized with closing remarks by Mr. Johnson.

This document is, in essence, minutes of the workshop. Although speakers supplied copies of their remarks, they were not formal papers and should be used only as minutes of a working seminar. A discussion period followed each presentation and a summary of each is also given.

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SUMMARY OF INTRODUCTORY AND WELCOMING REMARKS

Gary L. Johnson
Project Officer
Special Studies Staff
IERL-RTP

John O. Smith
Director
Office of Program Operations
IERL-RTP

INTRODUCTORY REMARKS

The attendees to the first Fine Particle Emissions Information System (FPEIS) User's Workshop were greeted by Gary L. Johnson, EPA Project Officer for the FPEIS. Johnson briefly outlined the agenda for the workshop, noting in particular that the sessions were to be very informal and that comments and/or questions from the attendees were welcome during any part of the program.

WELCOME

The welcoming remarks were made by Dr. John O. Smith, Director of the Office of Program Operations at IERL-RTP. Dr. Smith briefly described the mission of the Industrial Environmental Research Laboratory at RTP and outlined IERL's role within EPA's Office of Research and Development. IERL's mission is to "develop and demonstrate cost effective technologies to prevent, control, or abate pollution from operations with multimedia environmental impacts associated with the extraction, processing, conversion, and utilization of energy and mineral resources, as well as with industrial processing and manufacturing."1/ Smith noted that IERL-RTP and its sister IERL in Cincinnati, Ohio, comprise EPA's Office of Energy, Minerals, and Industry (OEMI) under the direction of Deputy Assistant Administrator Stephen Gage.

The Fine Particle Emissions Information System (FPEIS) represents the first technical computer data base developed by IERL-RTP. The FPEIS will be a model for possible future data bases which would store environmental assessment and other emissions data. It is currently recognized that the centralized storage of test data will significantly enhance its usability and lead to a faster solution of today's environmental problems.

In order to disseminate information on the FPEIS to the user community and to solicit their comments and criticisms, the forum of a User's Workshop was selected. This is the first FPEIS User's Workshop.

REFERENCES

1. Industrial Environmental Research Laboratory, Annual Report 1975, Research Triangle Park, North Carolina (January 1976).

BACKGROUND AND PURPOSE
OF THE
FINE PARTICLE EMISSIONS INFORMATION SYSTEM

Gary L. Johnson
Project Officer
Special Studies Staff
IERL-RTP

INTRODUCTION

The Industrial Environmental Research Laboratory (RTP) has developed a computerized information system on primary fine particle emissions to the atmosphere from stationary sources to assist engineers and scientists engaged in fine particle control technology development.

The Fine Particle Emissions Information System (FPEIS) will contain source test data including particle size distributions; chemical, physical, and bioassay testing results performed on particulate samples; design and performance data on particle control systems applied; process descriptions of the sources; and descriptions of the sampling equipment and techniques employed.

The User's Workshop is intended to provide a description of what the FPEIS is, what data can be stored, what it can do, how it came to be, and how it may be used.

FPEIS OVERVIEW

The FPEIS is a computerized follow-on of the Fine Particle Emissions Inventory developed by Midwest Research Institute (MRI) in 1971.[1] A plan to update the 1971 inventory was initiated in July 1974, by the Industrial Environmental Research Laboratory (IERL) at Research Triangle Park, North Carolina. By early 1975, the planned update of the Fine Particle Emissions Inventory was supplanted by the concept of a computerized information system on fine particle emissions from stationary sources.

since 1970 indicate that such extrapolations may have introduced large errors in the data base. Since data from direct measurement of many sources and collectors by use of recently developed fine particle sizing methods are now available, it is now possible to develop a more accurate summary of fine particle emissions data.

In July 1974, IERL directed MRI to update the 1971 inventory. This request followed an update sponsored earlier by EPA's Office of Air Quality Planning and Standards. The principal specifications of the task were to revise and update the existing fine particle emission inventory and to develop program elements for IERL by which the fine particulate data base would be updated. Several meetings were held with MRI during October, November, and December 1974, to review the scope of the project work.

In recognition of the quantity of data involved, development of standardized data input and output forms was begun and identification of data types to be contained in the data base was made on the assumption that the earlier scope of work would be modified extensively and that computerization of the inventory would be an integral part of the revised scope of work.

Subsequent discussions with MRI resulted in a total redefinition of the concept of a "fine particle emissions inventory." The plan to revise the 1971 inventory was replaced by the concept of a computerized Fine Particle Emissions Information System capable of providing current information and enabling the continuous updating of the system with new information.

WHY COMPUTERIZATION OF THE DATA?

A computerized information system on fine particle emissions would enable persons to access a current source of data. A computerized data base could process special requests for sorting or editing of data. For example, it would be a simple task for the computer to print a list of all sources in the data base which are controlled by baghouses. To compile such a list by hand would require hours. A computerized system would also allow for the almost-continuous updating of new information. EPA test results could be entered into the system as the testing programs were completed. Then, periodically, a detailed addendum report analyzing the present state of the data base could be issued. Such a report would contain source prioritizations, evaluations of control technology, identification of data deficiencies, etc., and could be used to direct planning efforts for future test programs.

Upon assessing both the magnitude of the quantity of information to be accumulated and the potential for its use if presented in a convenient form, the advantages for computerization of the information far outweighed the disadvantages. Clearly, there were certain disadvantages: the loss of previous effort by MRI, the additional effort required for computer data base development, the need for on-going support, etc. The MRI Fine Particle

Inventory has in the past been one of the most often referenced documents in particulate control technology literature. Its role, therefore, in the development of particulate standards and control technology has been a major one. The need to have a current and, more importantly, accurate emissions inventory is obvious. Consequently, the original scope of the project was changed significantly and an approach has been developed which has resulted in the creation of a useful and usable information system on fine particle emissions.

REFERENCES

1. Shannon, L. J., P. J. Gorman, and M. Reichel, "Particulate Pollutants System Study, Volume II: Fine Particle Emissions," Midwest Research Institute, EPA No. APTD-0744, NTIS No. PB 203-521 (August 1971).

FPEIS STRUCTURE

The fundamental element of the data base system is the test-run, see Figure 1. A test run is defined as "any test measurement of a specific source for a specified length of time, in a specified location with specific particle size measuring equipment." The test run is the point on which the remainder of the matrix is balanced. Associated with this test run data are the relevant data for source operating characteristics, control device parameters, test characteristics, sampling conditions and any other pertinent information and data which describe the test operation during the period of the test run. There are provisions for including supplemental information such as subsequent chemical analysis or biological testing results obtained from the collected sample. Assignment of a test run number to a data set will be on a sequential basis by the encoder when the data are compiled for entry into the system.

Groups of test runs, that is, repeated measurements for the same source/collector combination with the same or common source operating conditions at the same location, are clustered into a test subseries. As can be seen in later discussions, this arrangement allows grouping of simultaneous test runs such as inlet/outlet pairs or multiple measurement equipment methods, i.e., impactors, diffusion batteries, etc., into a common, coherent time set. This grouping minimizes repeating of relatively constant data elements recorded during the subseries such as source operating mode, rate, feed material, volumetric flow rate and stack gas velocity. Data which can be considered or was obtained over the same time period as that for the test subseries such as mass train results, Orsat analysis, etc., are also clustered within the subseries framework. Significant changes in source or collector operation as part of the testing protocol such as change in source feed material, combination of fuels, change in the L/G ratio for scrubbers, change in air-to-cloth ratio for fabric collectors, etc., define a new subseries. Test subseries numbers are assigned on an arbitrary basis at the time of encoding and entry into the system by the encoder.

The uppermost level in the structure is the test series. A test series is composed of groups of subseries and will usually consist of the information contained in a test report, technical journal article, etc., and is specific to a given source/collector combination. Test programs or reports which include more than one source/collector combination will, of course, be separated into different test series. Different test series, in any case, will be distinguished by assignment of test series numbers from a master file listing. Test series numbers for the initial data base loading have been assigned on an arbitrary basis and future additions will be given master file numbers as received by the FPEIS administrator.

DESCRIPTION OF THE FPEIS DATA BASE

by

M. P. Schrag
Midwest Research Institute

INTRODUCTION

The Fine Particle Emissions Information System (FPEIS) has been developed to provide a current, flexible data base containing test data for stationary source generated fine particle emissions. The scope of informational and data elements allowed in the data base includes source process information, design and operating data on applied particulate control technology, descriptions of sampling equipment and methods used, results of physical, chemical and biological analyses of collected samples and, finally, particle size distribution data available as mass, number or surface distributions.

A data element is defined as a computer variable corresponding to a particular source test data item. The data elements of the types just mentioned, e.g., process information, etc., are arranged on a test run specific basis sufficient to provide complete information and data regarding the source test measurement. The completeness of the information for any given source test is limited only by the availability of such information as contained in the test report or original reference from which the FPEIS input is derived.

To ensure compatibility with other EPA data bases, the FPEIS uses identical classifications for certain components. The NEDS "Source Classification Codes" are used for source categorization. Chemical identification and analysis methods are used as developed for the SAROAD/SOTDAT systems. A standard protocol for units (all metric) and terminology has been developed for the FPEIS.

With this brief discussion providing an introduction to the FPEIS, let us proceed to an in-depth discussion of the structure, organization, content and current status of the data base system.

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FPEIS STRUCTURE

The fundamental element of the data base system is the test-run, see Figure 1. A test run is defined as "any test measurement of a specific source for a specified length of time, in a specified location with specific particle size measuring equipment." The test run is the point on which the remainder of the matrix is balanced. Associated with this test run data are the relevant data for source operating characteristics, control device parameters, test characteristics, sampling conditions and any other pertinent information and data which describe the test operation during the period of the test run. There are provisions for including supplemental information such as subsequent chemical analysis or biological testing results obtained from the collected sample. Assignment of a test run number to a data set will be on a sequential basis by the encoder when the data are compiled for entry into the system.

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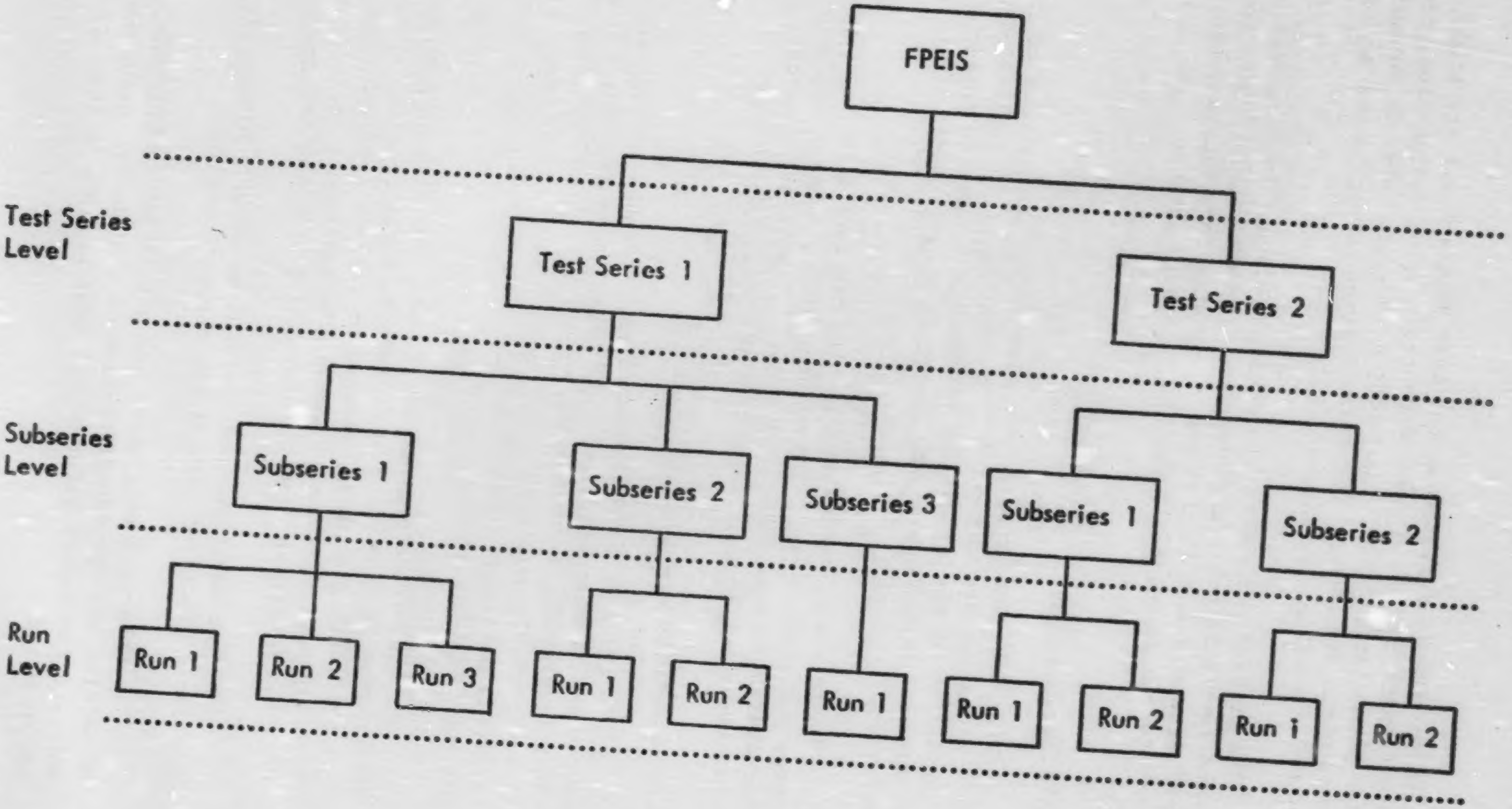
FPEIS
Test Series Level
Test Series 1
Test Series 2
Subseries Level
Subseries 1
Subseries 2
Subseries 3
Subseries 1
Subseries 2
Run Level
Run 1
Run 2
Run 3
Run 1
Run 2
Run 1
Run 1
Run 2
Run 1
Run 2

Figure 1 - FPEIS Structure

Data elements included at the test series level are items such as reference (report number, etc.) and control device designation, description, design parameters, typical operating parameters, etc. In summary, those factors which are common to the lower level subseries and included test runs are grouped at the series level.

The primary purpose of the stratification into test series, subseries and run levels is for record-keeping purposes within SYSTEM 2000. Structuring of data elements in this manner ensures that data and information pertinent to the associated level can be stored and retrieved as a coherent unit.

FPEIS ORGANIZATION

FPEIS data are grouped into five general categories of information. These groupings are discussed in general terms in the following paragraphs. A tabulation of the FPEIS data elements and their definitions is given in Appendix A. Specific encoding instruction will be discussed in a later presentation.

The following tables are an illustration of these five categories: source and test series related information, control system description, test characteristics, biological and chemical analyses results, particle size measurement equipment, and size distribution data.

Source Characteristics (see Table 1)

This group of data elements identifies the source that was tested, the source and site location and reference information for the test series. An entry is provided for additional remarks or data pertinent to the test series. To enable a general grouping of sources to be made, each source test series is described in terms of the NEDS Source Classification Codes that are applicable.

The difference between source name and site name as indicated in the definitions is that the source refers to the specific source whereas the site refers to the plant, station or company involved. The provision of these separate elements allows one to distinguish between tests on different boilers with an electric generating station, for example.

UTM Zone Locations and coordinates as well as the city/state/zip code are also included as part of the source location.

Two other elements which are not listed in this table but are worthy of mention are the identification of the testing group making the measurement and the report reference or journal article from which the information was acquired.

TABLE 1

FPEIS DATA ELEMENTS

1) SOURCE CHARACTERISTICS:

   Source Category (SCC)

   Type of Operation (SCC)

   Feed Material Class (SCC)

   Operating Mode Class (SCC)

   Source Name

   Site Name

   UTM Zone Location and Coordinates

   Source Address (Street, City, State, Zip Code)

2) CONTROL DEVICES:

   Generic Device Type

   Device Category

   Device Commercial Name

   Manufacturer

   Device Description

   Design Specification - Type and Value

   Operating Parameter - Type and Value

Control System Description (see Table 1)

This group of elements includes a description of the control system used (if any) during a specific test series, in addition to pertinent design specifications and operating parameters. Standard nomenclature is provided for describing the system and in specifying the minimum information and data required to adequately characterize the control system, its design and the operating conditions during the time of the test.

This group is arranged in a format which will allow maximum flexibility for cases where multiple devices exist on the same source, e.g., cyclone and electrostatic precipitator in series, as well as to provide adequate space for devices where extensive design and operational data are available.

Generic device type refers to the general classification of the control device (ESP, cyclone, etc.). The device class data element is intended to designate the state of development as specified in the definition (conventional, novel, prototype, pilot scale). General guidelines for usage of these latter terms are as follows:

Conventional: Typical, commercial model with modifications only to suit needed application engineering for installation and usage. Well-known source/device combinations in conventional or widespread use are in this category. As an example, application of a cold-side plate precipitator to a coal-fired utility boiler is in this device class.

Novel: A device utilizing untried or unproven collection mechanisms or combinations of mechanisms. This device class will usually include laboratory models or a very small capacity system for demonstration of proof of principle.

Prototype: A device of modified conventional type, or first in a series of a new system or class of device. An example of this device class is the charged droplet scrubber at the Kaiser plant in Fontana, California.

Pilot Scale: A device with capabilities for handling only a portion of the source effluent to which it is applied. This device class will consist principally of conventional equipment applied to a source which has not been historically controlled with the specified conventional device. An example of this device class would include use of the EPA portable pilot fabric filter.

The above guidelines are not completely explicit. However, as further explanation the concept of a new control device progressing in development within the above categories through time would be: (a) novel; (b) prototype; (c) pilot scale; and (d) conventional. The reason for these designations is to allow a user to assess the utility of the size data considering the state of development or breadth of application of a given device to a given source.

Additional data elements are provided in this grouping for the commercial name of the device, the manufacturer, and additional qualifying information.

A device category data element allows a more specific designation of the generic device. Table A-3 in the Appendix gives specific descriptors to be used for each generic device type. Only these words or necessary combinations are to be entered in the input data form.

Design and operating specifications and parameter values are included in this grouping. Again, please note that a standard set of nomenclature is provided (Tables A-4 and A-5). In this case, however, these tables should be considered as minimum information. Additional specifications or parameters can be included.

These tables also include standard units that are to be used. Throughout the FPEIS data base all units will be in the metric system, although not necessarily the SI standard designation. We have attempted to utilize common practice for some particular engineering terms, e.g., pressure drop is in centimeters of water gauge rather than the SI pressure unit of pascals.

Test Characteristics (see Table 2)

This grouping of data identifies the test subseries and operating and test parameters specific to a cluster of test runs. It is important for sorting purposes that the subseries test date, start time and finish time be recorded since this mechanism is used to maintain the organization of test runs within a subseries cluster.

Source operating characteristics are the major components of this grouping together with so-called one-time measurements that are part of the test protocol. Examples of the operating characteristics indicated are operating rate, operating mode, feed material, etc. Examples of the one-time measurements include mass-train sampling, Orsat analyses, trace gas sampling, etc.

Space is also provided for subseries comments to incorporate brief narrative comments or data which may be relevant. The subseries comment category, for the present, is also used to enter device operating parameters and values that are associated with individual test runs. It is important to note a subtle point regarding device operating parameters and values and what constitutes a new subseries. The change in source or collector conditions that are due to expected fluctuations in operation between test

TABLE 2

TEST CHARACTERISTICS

Sub-Series Number

Sub-Series Test Date

Sub-Series Start and Finish Time

Sampling Location and Description

Source Operating Mode

Source Operating Rate

Feed Material Composition

Volumetric Flow Rate

Gas Temperature and Pressure at Sampling Location

Moisture Content

Percent Isokinetic Sampling

Gas Composition

Trace Gases in ppm

Mass Train - Total Mass Concentration

Mass Train - Front Half Mass Concentration

Mass Train Comments

Sub-Series Comments

runs is not cause for definition of a new test subseries. For example, fluctuations in the volume flow rate to a fabric filter during test runs will result in a change in the air-to-cloth ratio. These data are important to note as specific to a test run but do not create a new subseries. When the volume flow rate and resulting change in the air-to-cloth ratio are part of test protocol, then the accompanying data are part of a new subseries.

Finally, standard units to be used for all parameters in this grouping are indicated in the definitions.

Bioassay Testing and Chemical Analyses (see Table 3)

This group provides for entry of data from biological testing and chemical analyses conducted with the particulate samples collected during the test subseries. At the present time, the frequency of bioassay testing is low; however, it is expected that future test programs will include some of this type of testing, and space has been provided for future use.

The type of bioassay test which may be entered include cytotoxicity, mutagenicity, inhalation, skin painting and neonatal. The current definition is in the form of standard nomenclature and will be modified as appropriate in the future. Space is provided for narrative comments regarding test results.

The chemical analysis group is defined utilizing the coding system for specific elements and compounds developed for the SAROAD/SOTDAT data base system. There is also a codification of analysis methods from the same system.

Where available, the chemical analysis will be reported on a size distribution basis over five decades from greater than 10 μm down to 0.01 μm. For an analysis which required pooling of collected material from several impactor stages because of the small quantities of material or for tests where only mass train particulate catch was analyzed, the data element entitled "Filter/Total Concentration" is provided.

One can readily see that the decade designations will not agree with cutoff diameters for any given impactor. However, a curve of chemical concentration versus size for a specific test can be used to approximately apportion the concentrations into the specified decades. If more precise information is required by a user, the original test results are available in the referenced report.

Particle Size Equipment and Date (see Table 4)

This data grouping provides identification of particle size measuring equipment, specific test run data and sampling conditions and particle size

TABLE 3

BIOASSAY TESTING AND CHEMICAL ANALYSES

Bioassay Test Type

Bioassay Test Remarks and Results

SAROAD Chemical ID

Chemical Analysis Method

Concentration in Range Above 10 µm

Concentration in Range 10 to 1 µm

Concentration in Range 1 to 0.1 µm

Concentration in Range 0.1 to 0.01 µm

Concentration in Range Below 0.01 µm

Filter/Total Concentration

TABLE 4

PARTICLE SIZE EQUIPMENT AND DATA

Run Number

Measurement Equipment Type

Size Range Lower and Upper Limit

Substrate

Sampling Start Time and Duration

Sampling Flow Rate

Dilution Factor

Sampling Train Temperature and Pressure

Percent Moisture

Particle Diameter Basis

Concentration Basis

Upper Diameter Boundary

Density - Value and How Determined

Resistivity - Value and How Determined

Physical Properties Comments

Run Comments

Diameter Boundary

Concentration

data from the particular test run. For discussion purposes this group can be separated into two basic parts: measurement particulars and particle size distribution data.

The measurement particulars include data elements defining the measurement equipment type (using standard nomenclature indicated in Table A-7 of the Appendix); the overall size range limits for this equipment; notation of the substrate or collection surface used; gas conditions at the measurement location; sampling time; flow rate; and dilution factor, if used. The specification of gas conditions at the measurement location and dilution factor are provided for use when ex-situ sampling is performed, e.g., diffusion battery sampling system. As with the subseries level, the run start time and run duration are key factors required for run records and clustering of runs within the test subseries.

Two additional bookkeeping factors which are used for keying the output calculation program include designation of the particle diameter basis (Aerodynamic or Stokes) and concentration basis (mass or number).

The particle size distribution data include designation of the diameter boundary and associated mass or number data. The diameter boundary indicates the lower class interval boundary point for the specific basis (Aerodynamic or Stokes) and measurement techniques.

FPEIS CONTENT AND CURRENT STATUS

The FPEIS has been implemented on the computer here at RTP and the initial loading of source test data has been completed. The initial data base loading included 52 test series and over 700 test runs. Data currently being processed for the first update loading are about equivalent in number.

An assessment of the initial loading of data has been completed and the result is in a draft summary report.

Also in draft form are a comprehensive Reference Manual and User Guide for the FPEIS which will be available for user reference. These latter documents will be periodically updated as the system is expanded and modified in the future.

DISCUSSION

Q. Is the person responsible for doing the testing to be designated?

A. Yes, the testing organization, company, etc., as appropriate is required on page 1 of the input form.

Q. Should the FPEIS contain more complete discussion and data of the process or source design specifications such as are included in the Energy Data System?

A. A modification of this type could be incorporated at a later date. A temporary data element addition to indicate the source operating condition such as "percent design capacity" can be made until it is decided that more information is necessary.

Q. Should there be more explicit input information required regarding handling, transport and storage of samples for chemical analysis and bioassay?

A. Such comments can be added as appropriate in series, subseries or test remarks.

COMMENTS

Audience - Suggest adding "plate area" and "specific collection area" to design and operating parameters for electrostatic precipitators.

Response - The group of parameters specified in Table A-4 are defined as minimum and these additional specifications can be added with no problem.

Audience - Suggest referring to design efficiency and operating efficiency as "gross mass design efficiency" and "gross mass operating efficiency," respectively.

Response - Good Suggestion. This would minimize confusion with fractional efficiency.

Audience - I suggest adding more specific information on substrate.

Response - This can be taken care of by adding a data element now. As more information becomes available on substrate usage an expansion of this important information can be incorporated by use of the remarks.

Audience - The decades specified for chemical analysis results are somewhat atypical with respect to current reporting conventions and it is unlikely that methods will be soon available for such small sizes.

Some analysis results are not reported nor are they amenable to mass concentrations.

Response - Both comments are well taken. We can revise the input format so that the size ranges are to be specified by the investigator based on the particular system that was used.

INPUT, PROCESSING, AND OUTPUT OF FPEIS

A. K. Rao
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INTRODUCTION

Having heard the FPEIS concept, I shall now discuss topics in Figure 1, namely, the data input, output, and processing. The success of FPEIS will depend on how well you, the user, understand how to input the system with data, data processing involved, and standard output of the system.

The presentation will be as follows. First, the system input procedures will be discussed. For this, constant reference to the information in the Appendix will be made. Next, the output format will be discussed. At this time, size distribution plots as drawn by the standard output package will be explained. As an example, some size distribution plots from the current data base will be discussed. Finally, the function of the data processing programs will be discussed briefly.

INPUT

A typical source/collector combination is shown in Figure 2. The FPEIS is designed to contain: (a) characteristics of sources; (b) characteristics of control devices; and (c) characteristics of aerosols emitted by various source/collector combinations. It will also contain:

* Test particulars;

* Particulate mass train data;

* Particulate physical, bioassay, and chemical properties;

* Measurement instrument/method; and

* Particle size distribution data.

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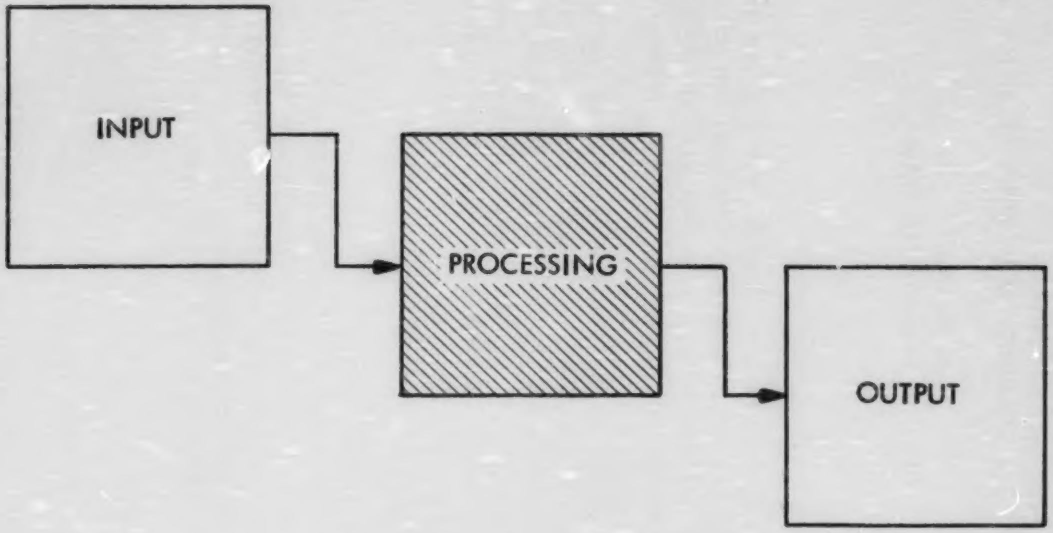
INPUT
PROCESSING
OUTPUT

Figure 1 - Topics for Discussion: FPEIS Input, Processing, and Output

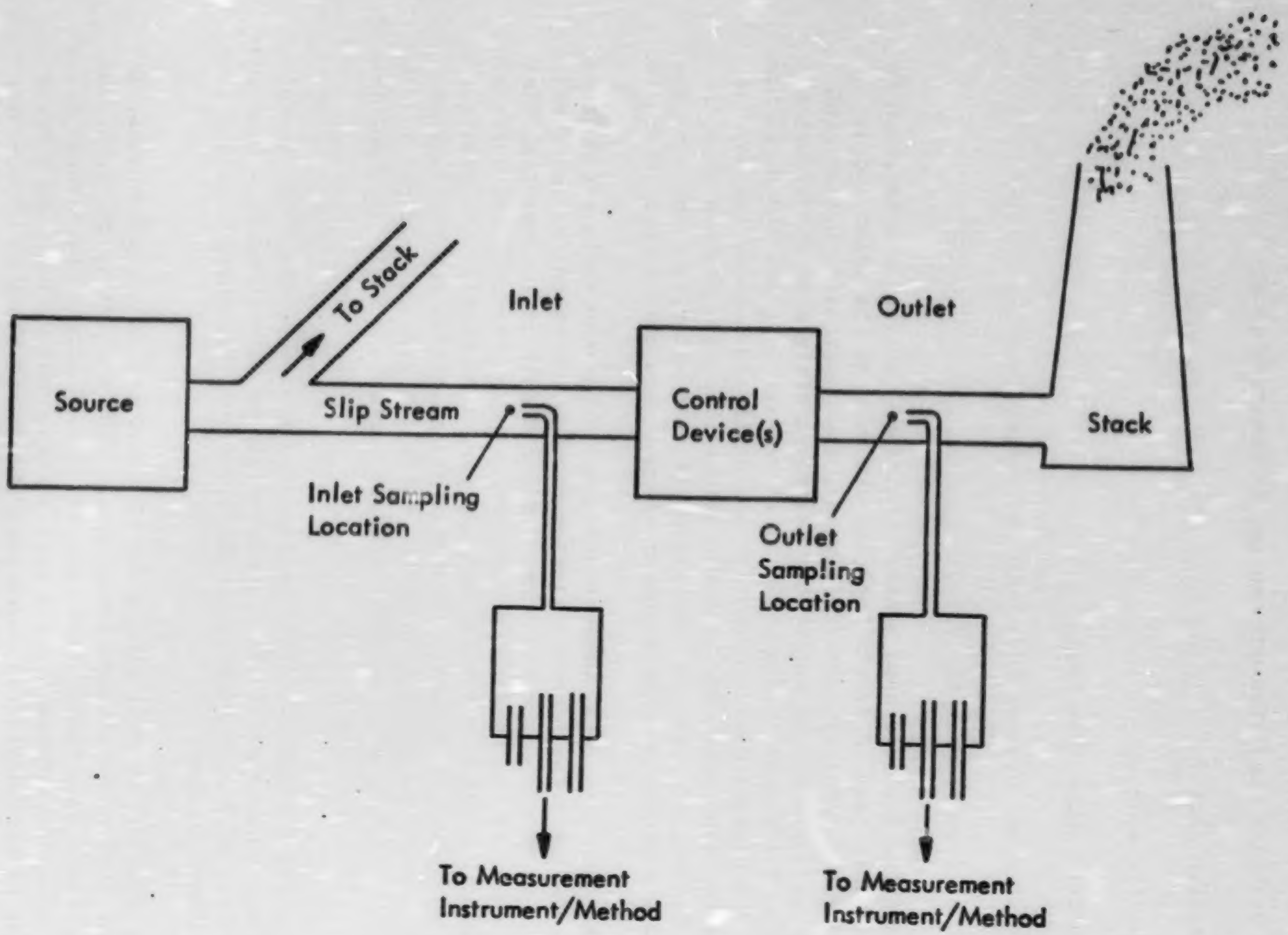
To Stack
Inlet
Outlet
Source
Slip Stream
Control Device(s)
Stack
Inlet Sampling Location
Outlet Sampling Location
To Measurement Instrument/Method
To Measurement Instrument/Method

Figure 2 - Typical Source/Collector Combination

It is designed such that one can get information on a:

- Specific test;
- Specific source;
- Specific control device;
- Specific measurement instrument or method; and
- All or a portion of the data.

The sampling log of a hypothetical coal-fired boiler test is shown in Figure 3. In this test, a Brinks impactor was used at the inlet and an Andersen impactor, optical particle counter, and a diffusion battery/CNC combination was used at the outlet for making particle size distribution measurements. The boiler load was 120 MW in the morning, and 140 MW in the afternoon. The control device operation was steady throughout the day. In the morning two runs were made with the Brinks impactor, one run with the Andersen impactor, one with the optical particle counter, and one with the diffusion battery/CNC. A similar number of runs were made in the afternoon.

We call each individual measurement a test run--the whole set of runs a test series. Since the source/collector combination operation was steady in the morning, we group the two inlet runs, and call it a subseries. Similarly, we group all the outlet runs performed in the morning, and call them another subseries. Other subseries are designated similarly. The premise behind the subseries designation is that the aerosol remains the same as long as the source and control device(s) remain steady. So multiple instruments can be used to cover the wide range of particle size or make multiple runs with a given instrument.

The organization of the FPEIS is shown in Figure 4. The FPEIS contains several test series, each of which contains one or more subseries. Each subseries consists of one or more runs. The levels of run, subseries, and test series are shown in Figure 4.

In Appendix D, you will find a set of completed data input sheets. The set contains five types of data input sheets used for coding the data. The contents of these data input sheets are shown in Figure 5. Data Sheet No. 1 contains source characteristics and test series remarks. Data Sheet No. 2 contains the control device(s) characteristics. Data Sheet No. 3 contains the test characteristics, particulate mass train test results, and particulate physical properties. Data Sheet No. 4 contains particulate bioassay and chemical composition data. Data Sheet No. 5 contains measurement instrument particulars and particle size distribution. The completed set contains data of two subseries of the hypothetical test described previously (see Figure 3).

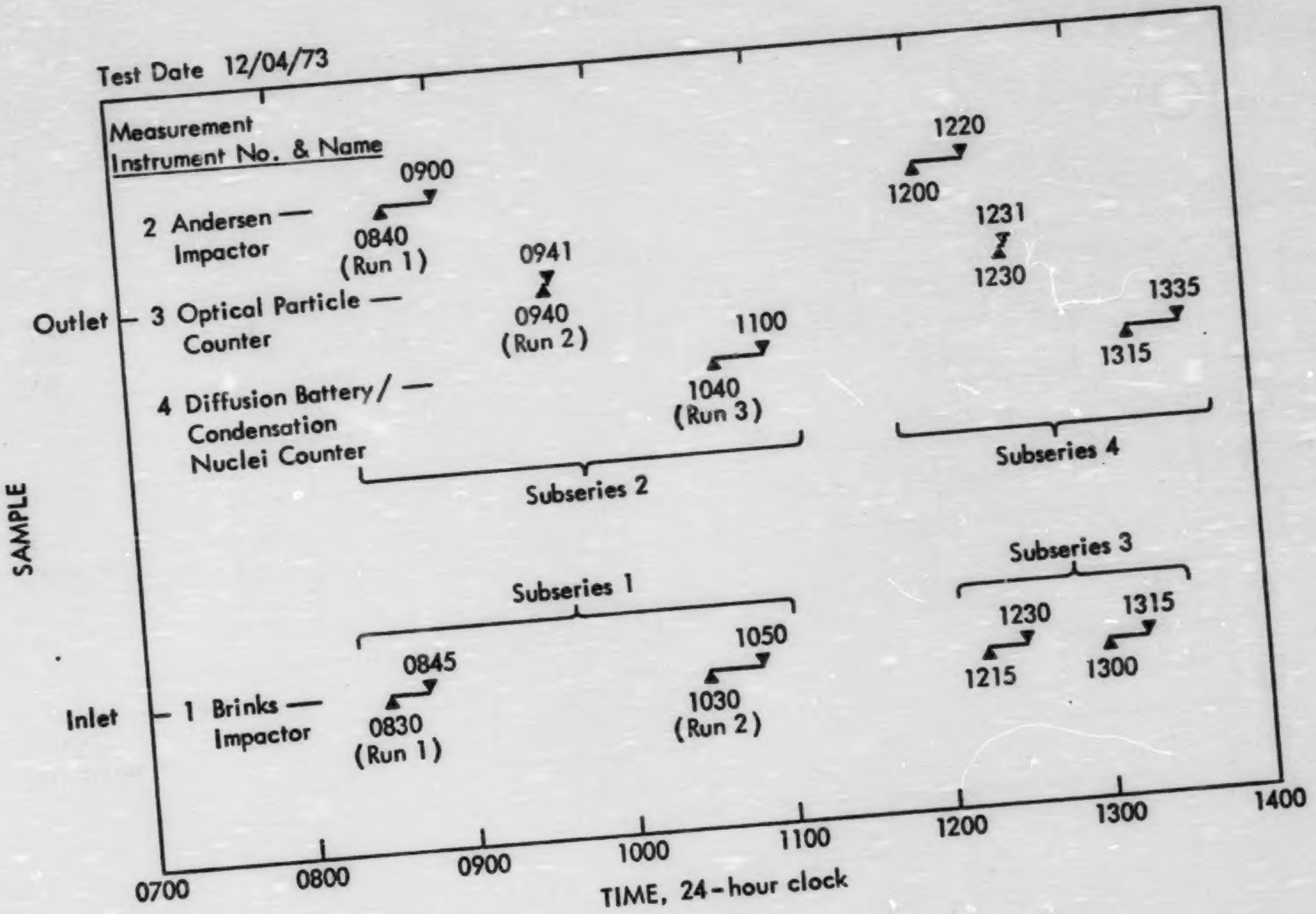

Figure 3 - Sampling Log for 10 Runs

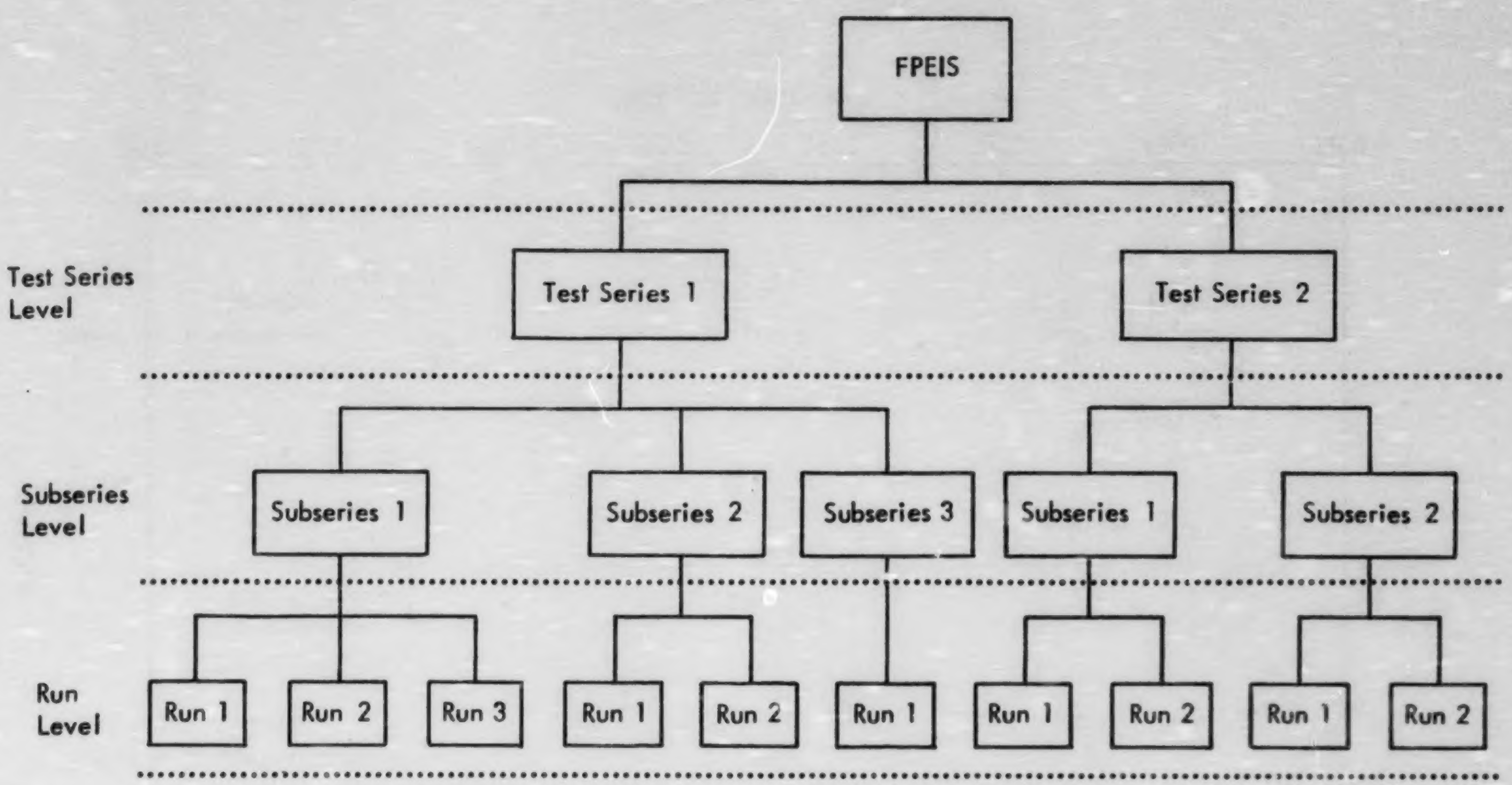
FPEIS
Test Series Level
Test Series 1
Test Series 2
Subseries Level
Subseries 1
Subseries 2
Subseries 3
Subseries 1
Subseries 2
Run Level
Run 1
Run 2
Run 3
Run 1
Run 2
Run 1
Run 1
Run 2
Run 1
Run 2

Figure 4 - FPEIS Organization

DATA INPUT SHEET ORGANIZATION

INPUT DATA SHEET NO.	TEST SERIES LEVEL	SUBSERIES LEVEL	RUN LEVEL
1	SOURCE CHARACTERISTICS TEST SERIES REMARKS		
2	CONTROL DEVICE(S) CHARACTERISTICS	CONTROL DEVICE(S) OPERATING PARAMETERS	
3		TEST CHARACTERISTICS PARTICULATE MASS TRAIN RESULTS PARTICULATE PHYSICAL PROPERTIES	
4		BIO ASSAY TEST DATA CHEMICAL COMPOSITION	
5			MEASUREMENT PARTICULARS PARTICLE SITE DISTRIBUTION DATA

Figure 5 - Data Input Sheet Organization

Instructions for filling the data input sheets are given in the following sections.

A-FIELD

This contains source description, name of the testing organization, and the reference from which the data were obtained.

Test Series Number (Card A01, Columns 1 through 5)

This is an arbitrary number representing a group of runs made on one source/collector combination. The coder can give some number which will be changed by the FPEIS manager at the time of entering it in the data base. This as well as subseries number and run number discussed below must be filled to enable proper identification of data. However, these need to be filled only on the first card of each field (on A01, B01, C01 cards, etc.). Columns 1 through 10 of the first card of each field will be duplicated on other cards of that field at the time of keypunching.

Subseries Number (Card A01, Columns 6 through 8)

This is a sequential number representing a group of runs made at a certain time during which the operating parameters of the source/collector combination are not changed appreciably.

Run Number (Card A01, Columns 9 and 10)

A sequential number given to a test run within a subseries. This run should be capable of providing particle size distribution data on a portion or whole of particle size range of interest.

Source Classification Code (SCC I through IV, Card A01, Columns 16 through 66 and Card A02, Columns 16 through 35)

These codes are source classification codes developed by the National Emissions Data System (NEDS) for describing the source. These four levels of identification define a general category, and subcategories within the general category. The subcategories define classification as to fuel, industrial processes, products, equipment types used, etc. A new code has been added to the included NEDS list for laboratory evaluation of the control device, and some more codes may be added later. Note also that FPEIS uses the word description and not the numeric code.

Test Series Start Date and Finish Date (Card A01, Columns 67 through 78)

These are start and finish dates for the test series.

UTM Zone (Card A01, Columns 79 and 80)

Universal Tranverse Mercator (UTM) Zone location as found on U.S. Geological Survey maps showing UTM coordinates (see Figure A-1).

Site Name (Card A02, Columns 36 through 75)

Complete and unique name of test site. Abbreviations such as those shown in Table A-1 may be used wherever possible.

Source Name, Street, City, State, and Zip Code (Card A03, Columns 16 through 80, and Card A04, Columns 16 through 20)

Name and address of the source tested.

UTM Coordinates (Card A04, Columns 21 through 29)

UTM x and y coordinates for the source as found on USGS maps with scales less than 1:62,500.

Tested By (Card A04, Columns 31 through 80)

Name of the testing organization.

Reference (Card A05, Columns 16 through 75)

Publication reference in which the data were reported.

B-FIELD

This field contains remarks pertaining to all the test runs, and any additional information not covered by the data elements.

Columns 1 through 10 are test series numbers, subseries numbers, and run numbers, as given in A-Field. Columns 16 through 80 contain the test series remarks.

C-FIELD

This field contains control device description and design and operating parameters. If more than one control device is used, or if the space for design and operating parameters is not enough, additional sheets may be used.

Device No. (Cards C01, C02, C03, C04, and C05, Column 14)

This is the number of control devices, for example, if a boiler is equipped with a cyclone, spray tower, and an ESP--in that order. Cyclone is Device No. 1; spray tower is Device No. 2; and ESP is Device No. 3.

Device Category (Card C01, Columns 16 through 48)

Describes control device as in the Table A-3.

Device Class (Card C01, Columns 49 through 60)

States whether the control device is conventional, novel, prototype, or pilot scale.

Generic Type (Card C01, Columns 61 through 80)

General classification of control device in operation using standard nomenclature such as ESP, cyclone, wet scrubber, etc.

Commercial Name and Manufacturer (Card C02, Columns 16 through 75)

Commercial or given name of the device and complete manufacturers name.

Device Description (Cards C03 and C04, Columns 16 through 75)

Brief description of the device including physical arrangement, operational principles or problems, etc.

Control Device(s) Design and Operating Parameters (Card C05)

Column 15 - Letter Code D for design parameters and 0 for operating parameters.

Columns 16 through 45 - Design or operating parameter specification (Table A-4).

Columns 46 through 65 - Design or operating parameter value along with the units used. Do not use English units.

Columns 66 and 67 - Serial number of the design or operating parameter. The utility of this serial number will be explained later.

D-FIELD

This field contains test characteristics, and remarks and/or additional subseries information.

Control Device Inlet or Outlet (Card D01, Column 15)

This indicates the test location by one letter Code-I for inlet, 0 for outlet.

Subseries Date, Start and Stop Times (Card D01, Columns 16 through 29)

This contains test date and time, so identifying and comparing data is facilitated.

Source Operating Mode and Rate (Card D01, Columns 30 through 79)

This shows the source operating mode and rate at the time of the test in general terms. The superscript "*" will be explained later when discussing labor-saving features.

Feed Material and Feed Material Composition (Card D02, Columns 16 through 80)

This specified source feed material and composition at the time of test.

Sampling Location Description (Card D03, Columns 16 through 55)

This provides information on physical location of the test. Abbreviations such as those shown in Table A-1 be used.

Sample Condition at Sampling Location (Card D03, Columns 56 through 80 and Card D04, Columns 16 through 80)

This includes volume flow rate expressed in dry normal (20°C, 1 atm) cubic meter per second (dnm^3/s), flow velocity in meters per second (m/s), temperature in degrees centigrade, pressure in millimeters of mercury (mm Hg), water vapor by volume in percent, percent isokinetic rate, Orsat gas analysis in percent, and any trace gases that are measured in parts per million (ppm).

Subseries Remarks (Cards D05 to D10, Columns 16 through 80)

These contain additional information on the subseries not covered by the data elements. Further, it contains control device operating parameters for the second and subsequent subseries. The format used here would be like a text item.

E-FIELD

This contains the particulate mass train results. Front half and total refer to the particulate concentration determined from the mass collected on the nozzle, probe, filter and impingers. Mass train comments contain a description of the mass train and other information.

F-FIELD

This contains particulate physical properties including particle density and resistivity. Since density and resistivity are important parameters of aerosol, information on whether these parameters are assumed or measured is provided by 1 or 0 (1 for assumed, 0 for measured).

G-FIELD

This field contains biological analysis of the particulate collected. Some biological tests that may be performed are shown on p. 18 of Appendix A.

H-FIELD

This field contains the chemical composition of the particulates.

Columns 16 through 19 - Chemical element or compound code listed in Appendix A.

Column 20 - Chemical analysis method code listed in Table A-6 of Appendix A.

Columns 21 through 80 - Chemical concentration in micrograms per cubic meter ($\mu g/m^3$) (dry normal, i.e., 20° C, 1 atm, basis) in six size ranges, namely, filter/total, greater than 10 μm, 10 to 1 μm, 1 to 0.1 μm, 0.1 to 0.01 μm, and less than 0.01 μm. Filter/total range refers to the analysis which is performed on mass train filter catch or on the material collected on all impactor plates.

Chemical analyses often require pooling of impactor catches, either identical stages of different runs or stages within a given run. The procedure by which such pooled data are coded is shown by an example below.

Table 1 shows the impactor stage loadings in grams collected at the inlet of a utility boiler. Similar stages of the impactors for Runs Nos. 2, 3, and 4 were pooled together, and chemical analysis was performed by atomic absorption spectroscopy on the pooled material. The results were expressed in ppm by weight as shown in Table 2. The concentration of the chemicals can be expressed in micrograms per cubic meter ($\mu g/m^3$) by

$$\mu g/m^3 \quad \frac{\text{ppm x wt of pooled material in g}}{\text{total flow in m}^3\text{ at }20^\circ\text{C, 1 atm}}$$

The cyclone catch is taken as being in the size range of greater than 10 μm. Stages 1, 2, 3, and 4 catches are taken as being in the 10 to 1 μm size range. Stage 5 and back-up filter catches are taken as being in the 1.0 to 0.1 μm size range. This procedure of pooling results represents some modification and distortion of the original data, but considerably reduces the cost of the system.

I-FIELD

This contains the particulars of measuring instrument/method, gas conditions at the measurement locations, and measurement or run remarks.

TABLE 1

PARTICULATE MASS (GRAMS) COLLECTED IN THE PARTICLE SIZE TRAIN

	Inlet weights (g)				Weight (%)	
Stage	Run 2	Run 3	Run 4	Total	All Stages	Plates Only
Cyclone	0.09010	0.08628	0.09790	0.27428	77.55	
1	0.01200	0.01394	0.01821	0.04415	12.48	58.47
2	0.01187	0.00561	0.00766	0.02514	7.11	33.29
3	0.00134	0.00110	0.00224	0.00468	1.32	6.20
4	0.00023	0.00034	0.00059	0.00116	0.33	1.54
5	0.00013	0.00009	0.00016	0.00038	0.11	0.50
Back-up filter	0.00150	0.00100	0.00140	0.00390	1.10	
Total				0.35369		

TABLE 2

POLLUTANT CONCENTRATION (ppm)[a] VERSUS PARTICLE SIZE
COMPOSITE OF DUST COLLECTOR INLET SAMPLES

Pollutant	Cyclone > 7.5 µm	Stage 1 7.5 to 3.8 µm	Stage 2 3.8 to 2.3 µm	Stage 3 2.3 to 1.5 µm	Stage 4 1.5 to 0.79 µm	Stage 5 0.79 to 0.41 µm	Back-up Filter (< 0.41 µm)
Trace elements (cations)							
Beryllium	6.6	5.2	8.7	4.7	5.4	36.1	97
Cadmium	58	46	164	92	135	447	571
Chromium	381	251	458	1,080	3,080	4,510	1,740
Cobalt	29	26	30	28	58	75	66
Copper	75	147	261	152	564	2,660	3,380
Lead	13.4	14.5	15.5	29.5	12.1	18.4	10.2
Manganese	178	149	274	189	569	654	692
Nickel	450	460	840	690	2,460	689	1,380
Tellurium	3.5	2.3	2.3	3.1	6.6	17.4	41
Thallium	1.2	1.2	1.4	2.1	4.7	28	55
Tin	4.0	9.3	7.6	4.3	10.3	52	32.8
Vanadium	422	475	818	592	741	1,550	1,970
Zinc	426	791	1,110	781	2,670	4,620	4,100
Minor elements (cations)							
Calcium	23,000	20,000	35,000	20,000	80,000	81,000	133,000
Iron	134,000	145,000	155,000	295,000	121,000	184,000	102,000

---

[a] Parts per million by weight.

Measurement Instrument/Method No. (Card I01, Column 14)

This is the serial number of the measuring instrument/method in a given test series. For example, in the hypothetical test considered here, the Brinks BMS-II impactor, the Andersen impactor, the optical particle counter, and the diffusion battery are given numbers 1, 2, 3, and 4, respectively.

Measurement Instrument/Method Name (Card I01, Columns 16 through 45)

Specifies standard name for the measurement equipment used, such as is listed in Table A-7 of Appendix A.

Size Range and Collection Surface (Card I01, Columns 46 through 75)

Specifies the lower and upper size range the measurement instrument/method has covered in the test series, and type of collection surface used if the measuring equipment is an impactor. Specifies the type of adhesive coating and/or the type of filter used.

Dilution Factor (Card I01, Columns 76 through 80)

This is the factor by which the original aerosol mass or number concentration is diluted. Distortion in the size distribution by the diluter, sampling probes, etc., may be noted in the comments (Cards I02 and I03).

Measurement Start Time (Card I02, Columns 16 through 19)

This contains the measurement start time which is helpful for timewise analysis of subseries.

Sampling Period and Aerosol Flow Rate (Card I02, Columns 20 through 30)

Sampling period in minutes and flow rate in liters per minute will provide the total air flow through the instrument--useful for determining the aerosol concentrations.

Gas Conditions at Measurement Location (Card I02, Columns 31 through 42)

In *ex-situ* sampling, gas conditions at the measurement location can be different from that at the sampling location. The temperature in degrees centigrade (°C), pressure in millimeter of mercury (mm Hg), and water vapor by volume in percent shall be filled.

Comments on the Measurement (Cards I02 and I03)

These are run remarks and any information not covered in run data elements should be specified.

J-FIELD

This contains the particle size distribution data. Cards J01 through J03 contain the particle size class boundaries, and Cards J04 through J06 contain aerosol concentrations.

Column 14 of J01 and J04 cards contains the measurement instrument/method number. Column 15 of J01 card indicates whether aerodynamic or Stokes diameter is used. Columns 16 through 79 shall have class boundaries in micrometers (µm). The sizes shall be in the decreasing order with first number corresponding to the upper boundary of the aerosol that is sensed by the instrument. This upper boundary is usually not known, but can be estimated. Also, the last size boundary is usually not known, but can be estimated.

Column 15 of the J04 card specifies whether the concentration specified is by mass basis or by number basis ($\mu g/m^3$ or No./cc). The concentrations are expressed in scientific notation to avoid the loss of significant figures.

DATA INPUT SHEET STRUCTURE

Input to the system is prepared by filling five types of data input sheets; Sheet No. 1 for source description and test series remarks, Sheet No. 2 for control device design and operating parameters, Sheet No. 3 for test particulars, mass train test results, and particulate physical properties, Sheet No. 4 particulate bioassay and chemical composition test results, and Sheet No. 5 for measurement instrument/method description and particle size distribution data.

In the discussion above, we covered how each data element gets filled. Now we shall discuss how to code several runs and subseries of a test series. As an example, the first two subseries and their runs of the example test are coded, and completed sheets are shown in the Appendix. Notice that the first five sheets provide information on the test series, Subseries No. 1, and Run No. 1. The sixth page is the data input Sheet No. 5 which contains Run No. 2 of Subseries No. 1. For a moment, let us ignore the blanks in this and other sheets that follow this sheet. Only Data Input Sheet No. 5 is needed to code the Run No. 2. To code the second subseries we need only Data Input Sheet Nos. 3 and 4. In the example, however, Sheet No. 4 was not used as there were no biological or chemical data. Following Sheet No. 3, the 8th, 9th, and 10th pages provide data pertaining to the first, second and third runs of the second subseries. This is how the data sheets stack up.

LABOR-SAVING FEATURES

In developing the data input sheets and the data processing programs, several labor-saving features have been introduced.

These features reduce time, labor, and cost on the part of the coder, and eliminate keypunching and verifying costs on the part of the data manager. However, misunderstanding of these features may result in entering erroneous data. The labor-saving features are explained below. If the explanation is not clear, the safe rule to remember is "if in doubt, fill it out."

The important labor-saving feature is "fill in only new information." In other words, there is no need to code duplicate information if it is not different from previous runs or subseries. As an example, suppose the source operating mode (Card D01, Columns 30 through 59) is the same from Subseries 10 through 20 in a test; then it is sufficient to code source operating mode for the 10th subseries. For Subseries 11 through 20, the information of the 10th subseries will be copied. Note, however, if source operating mode for Subseries 10 through 14 and Subseries 16 through 20 is the same, but for Subseries 15 is different--it is necessary to code source operating mode for Subseries 10, Subseries 15, and Subseries 16. For the rest of the subseries, information from their preceding subseries will be copied. All the data elements which will be duplicated this way are marked with a star (*).

The data elements on Data Input Sheet No. 5 marked with ** are associated with measurement instrument/method. For these data elements, we need to code only those data which are new or different from the data for the measurement instrument/method in consideration.

The labor-saving feature using serial number for control device operating parameters is withheld temporarily pending some changes in the SYSTEM 2000.

DISCUSSION

Q. Do the SCC codes have to be exactly as in the NEDS system (no spelling variations)?

A. Yes.

Q. What is the purpose of UTM coordinates?

A. To match up with other EPA data bases; specifically with SOTDAT. Also, emission modeling people can make use of it.

Q. Wouldn't it be useful to give some more information on the source; whether or not the source is operating at designed conditions at the time of test?

A. At present there isn't much data on the sources. If there is more data it could be given in the test series remarks.

Q. Do you have any chemical composition data in the less than 0.01 μm size range?

A. At present we do not have any data in this size range, but new techniques such as ESCA may be used in the near future which can provide the data.

Q. Reformatting the experimental data to conform to your format is a lot of work, and it would be easier for the contractor to report the data as taken.

A. To bring the experimental data into the present format requires only simple calculations.

Q. Why do you propose this six decade arrangment? Why not have various sizes?

A. This is to minimize the size of the system and reduce cost. Furthermore, greater emphasis is placed on the particle size data than the chemical composition data.

Q. Why do we have to report data in $\mu g/m^3$? Why not report the raw numbers and let the machine make the calculations?

A. Yes, it is possible to require raw numbers only, and let the computer convert the raw numbers to $\mu g/m^3$. However, this requires some front end programs. Furthermore, many times the individual who collects the data will be doing some analysis of the collected data. In such situations, he will be needing aerosol concentrations which can be expressed easily in $\mu g/m^3$. The problem is that aerosol measurements are done by several different instruments, not just impactors; and test results are reported in several different ways. So, the front end programs would be too numerous to handle all possibilities.

Q. Do the figures used for concentrations and particle sizes represent the number of significant figures?

A. No, we choose three digits after the decimal place for particle size so that we could report sizes down to 0.001 μm. The system is flexible so as to accept what ever diameters you report. The digits in the output do not represent the number of significant figures because they are written with a fixed format. The same is true in the case of concentrations. Here, of course, scientific notation is used to handle the wide range of concentrations without loss of significant figures.

COMMENTS

Audience - Our experience is that greater mass is right around 1 μ size and chemical composition for particles larger than 5 μm is different from the composition of particles smaller than 5 μm. Furthermore, smaller than 3 μm is respirable size range. So instead of last two size ranges, there can be more ranges in 1 to 10 μm.

I guess the point we are trying to make here is that since we get chemical composition information on eight impactor stages, and since you got five decades here, last two of which are essentially meaningless, make eight columns for eight impactor stages and let the user do whatever he wants to do with the data.

Response - We are not disagreeing with you at all. The point is well taken. As a matter of fact, as the system matures we can actually improve on that. What we are saying is that this format is flexible, and it can be changed. This is the type of thing we need to know.

Audience - Lots of the time, we don't know what the cut points of impactor are, so keep the stage numbers on the forms.

I guess, what we are telling you right now is that what you have here is not satisfactory.

I have a couple of comments regarding size distribution data. The first one is on the cut point of impactors. From some of the work we did, and from some of work of Dorsey's people have done, we know that the manufacturer's calibration is faulty. If the hole diameter and number of holes per stage are known, we can develop the new calibrations, and rework the data. Therefore, I strongly suggest that you specify the number of holes per stage and their diameter so that if we discover a year from now that the calibrations are off by a factor of 20, all this data can be reworked and not lost. Some of the data which was taken with improperly calibrated impactors whose number of holes per stage and hole diameter is not known, it can't be corrected now and the data are useless.

The second comment is on the way concentrations are reported, i.e., $\mu g/m^3$. I really think that we should report stage weights instead of mass concentrations in $\mu g/m^3$. If we record the stage loadings, aerosol flow rates and sampling periods, the computer can calculate the $\mu g/m^3$. Moreover, a lot of people do not work in terms of concentrations.

Response - The first comment is good. A good description of the instrument which in the case of impactors includes the hole diameter and number of holes per stage can be given as test series remarks. Regarding impactor cut points, theoretical calculations using hole dimensions may not be accurate, and we should aim at obtaining experimental cut points.

Regarding the second comment, interpretation of the size distribution data is possible only when you express mass, surface or number per unit volume (e.g., grain loading). Also, if the instrument provides number/cc and if we know density in g/cc, then a simple multiplication gives concentration in $\mu g/m^3$.

Audience - I realize that there are some advantages. However, these concentrations can be calculated by the machine.

Response - Yes, but to accept raw data requires several types of data input sheets instead of one data input sheet as we have here. Even though the bulk of the present data is obtained with impactors, there are several other types of devices that can be used to collect size distribution data.

Audience - We require now that our contractors provide the filter weight gains in blank runs.

We need to have a whole set of new cards for reporting the weight gains of filters in the blank runs. We require this information from all of our source testing contractors. This is very valuable information.

Response - We don't need a new set of cards. Blank tests can be treated as separate runs with pertinent remarks.

DATA OUTPUT - STANDARD FORMAT AND OPTIONS

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G. S. McMahon
MRI Systems, Inc.

SYSTEM 2000 provides unlimited capabilities by which the user can sort, rearrange or compare the FPEIS data. It also provides a standard output format. This standard output format is the topic of this discussion.

Tables 1 and 2 and Figure 1 show the standard output format. In Table 1, all the descriptive information of the test is shown. In Table 2, the particle size distribution data are provided. In Figure 1, the three particle size distributions, namely, the mass, surface, and number distributions, are plotted.

The descriptive information in Table 1 is arranged under various headings. On the top, the subseries is identified. Following the identification are the source characteristics; control device(s) characteristics; physical, biological, and chemical data; measurement equipment and gas conditions; test subseries and test series remarks.

Table 2 contains particle size distribution data. In this table, the aerodynamic and Stokes boundary diameters and their geometric midpoints are given in the first four columns. The mass, surface, and number concentration and distribution function are shown in rest of the columns. On the bottom of this table, integral parameters of the size distribution, namely, total concentration in the size ranges above 1 μm, below 1 μm, less than 0.01 μm, 0.01 to 0.1 μm, 0.1 to 1 μm, 1 to 10 μm, and greater than 10 μm in mass, surface and number are presented. Total concentrations are expressed for mass in $\mu g/m^3$, surface in $\mu m^2/cc$, and number in No./cc. The concentration in various size ranges are expressed as percent of the total concentration.

TABLE 1

TEST DESCRIPTIVE INFORMATION

```
                                  STATIONARY POINT SOURCE
                          FINE PARTICULATE EMISSION INFORMATION SYSTEM
                          --------------------------------------------
TEST SERIES NO:    2        SUB-SERIES NO:   1  INLET    DATE:  9/26/73    FROM  13:20  TO  16:15

      TESTED FROM  09/25/73  TO  09/27/73    BY: CONTROL SYSTEMS LABORATORY,EPA,RTP,NC
      REFERENCE:   STATNICK,RM, EPA-65012-74-111     OCT 74

I. SOURCE CHARACTERISTICS-----------------------

      NEDS SCC CATEGORY:             INDUSTRIAL PROCES            SITE NAME     AMERICAN SMELTING + REFINING CO (ASARCO)
            OPERATION CLASS:         PRIMARY METALS               SOURCE NAME   COPPER SMELTER CONVERTER
            FEED MATERIAL CLASS:     COPPER SMELTER               ADDRESS
            OPERATION MODE CLASS:    CONVERTING                                 TACOMA           ,WA
                                                                  UTM ZONE AND X-Y COORDS: 10    -0.0     -0.0
      SPECIFIC OPERATION: CONVERTING
      OPERATING RATE:     500 T/DAY                               FEEDMATERIAL:
                                                                  FEED MATERIAL COMPOSITION:
II. CONTROL DEVICE(S) CHARACTERISTICS------------

      UNIT 1

      DEVICE CATEGORY:    PARALLEL PLATE
             CLASS:       CONVENTIONAL                            COMMERCIAL NAME:    ELECTRO STATIC PPTR
      GENERIC TYPE:       ESP                                     MANUFACTURER:       RESEARCH COTTREL,NL
      DESCRIPTION:

                DESIGN PARAMETERS                                             OPERATING PARAMETERS

                                                                  1)VOLUMETRIC GAS FLOW RATE          61.4 DNM3/S
                                                                  2)ELECTRODE AREA                    14813 M2
                                                                  3)CORONA CURRENT                    1243 MA
                                                                  4)SPARK RATE                        110 NO/MIN
                                                                  5)VOLUME PER UNIT ELECTRODE AREA    0.0042 M/S
                                                                  6)CORONA CURRENT DENSITY            0.084 MA/M2
                                                                  7)TEMPERATURE                       123 C

III. TEST CHARACTERISTICS -----------------------

      CONTROL DEVICE INLET          SAMPLING POINT DESCRIPTION: 3.5X7.3M DUCT IN UPSTREAM OF ESP DUCT      % ISOKINETIC: 104

      PROCESS CONDITIONS:   VOL FLOW=    61.4 DNM3/S  VELOCITY=   2.9 M/S  T=  123 C   P=   770 MMHG   WATER VAP %VOL=  5.8

      GAS COMPOSITION:      ORSAT-           CO2=    .40 %   CO=  0.00 %   O2= 20.20 %   N2= 79.40 %
                            TRACE GASSES(PPM)-SO2=30236, SO3=62.8

IV. PARTICULATE MASSTRAIN RESULTS --------------

      FRONT HALF= 3.350E+06 UG/DNM3   TOTAL= 3.690E+06   COMMENTS:
```

TABLE 1 (Concluded)

```
V. PARTICULATE PHYSICAL, BIALOGICAL AND CHEMICAL PROPERTIES

        DENSITY= 1.00 GM/CC ASSUMED  RESISTIVITY= 5.00E+11 OHM-CM ASSUMED

        CHEMICAL COMPOSITION DATA-----
                                                       AMOUNT IN UG/DNM3 FOR PARTICLE DIAMETER(UM) RANGE OF
             CHEMICAL AND ANALYSIS METHOD         ---------------------------------------------------------------------------------
                                                  FILTER/TOTAL    OVER  10     10 TO 1     1 TO 0.1   0.1 TO 0.01   UNDER 0.01

        1) ARSENIC                                616230.0000     -0.0000     -0.0000     -0.0000     -0.0000     -0.0000
             ATOMIC ABSORPTION
        2) CADMIUM                                 40959.0000     -0.0000     -0.0000     -0.0000     -0.0000     -0.0000
             ATOMIC ABSORPTION
        3) CHROMIUM                                  262.7300     -0.0000     -0.0000     -0.0000     -0.0000     -0.0000
             ATOMIC ABSORPTION
        4) COPPER                                    273.0600     -0.0000     -0.0000     -0.0000     -0.0000     -0.0000
             ATOMIC ABSORPTION
        5) MERCURY                                    67.5300     -0.0000     -0.0000     -0.0000     -0.0000     -0.0000
             ATOMIC ABSORPTION
        6) LEAD                                   321768.0000     -0.0000     -0.0000     -0.0000     -0.0000     -0.0000
             ATOMIC ABSORPTION
        7) ZINC                                   227673.0000     -0.0000     -0.0000     -0.0000     -0.0000     -0.0000
             ATOMIC ABSORPTION

VI. MEASUREMENT EQUIPMENT AND GAS CONDITIONS

        UNIT  1           1 RUNS

        EQUIPMENT NAME: BRINK-MODEL B                 COLLECTION SURFACE/SUBSTRATE: UNCOATED SS CUPS
        SIZE RANGE:       .050  TO  10.000 MICRONS    SAMPLING RATE:     2.8 LPM     SAMPLING PERIOD:    15.0 MIN
        DILUTION FACTOR=   1.0        TEMP=  104 C    PRESSURE=         770 MMHG     WATER VAP %VOL =  5.8
        COMMENTS: IMPACTOR POSITION VERTICAL

VII. TEST SUB-SERIES REMARKS----------------------



VIII. TEST SERIES REMARKS-------------------------

        DUCT VELOCITY WAS OBTAINED AT ONLY ONE LOCATION AND RESULT CAN
        BE CONSIDERED APPROXIMATE
        SMOKE STACK HEIGHT 163 M
        18% OF THE SMELTER CONVERTER FLUE PASSES THRU AN ACID PLANT (SOX
        REMOVAL 96.7%) BEFORE REACHING THE ESP
        PARTICLE SIZE DISTRIBUTION DATA READ FROM GRAPH (AVE OF 3 RUNS)
        PARTICLE SIZE BOUNDARIES ARE ARBITRARILY CHOSEN
        SAMPLES DRIED 3HR AT 80C DESICCATED 2HR + WEIGHED ON METTLER H20T
        BALANCE
```

TABLE 2

PARTICLE SIZE DISTRIBUTION DATA

TEST SERIES NO: 2   SUB-SERIES NO: 1 INLET   DATE: 9/26/73   FROM 13:20 TO 16:15

IX. PARTICLE SIZE DISTRIBUTION DATA

PARTICLE DENSITY= 1.00 GM/CC ASSUMED

UNIT 1 BRINK-MODEL B   RUNS 1

AERODYNAMIC DIA (UM) BNDRY	AERODYNAMIC DIA (UM) MID PT	PARTICLE DIA (UM) BNDRY	PARTICLE DIA (UM) MID PT	DM (UG/DNM3)	DM/DLDAE (UG/DNM3)	DS (UM2/CC)	DS/DLDAE (UM2/CC)	DN (NO./CC)	DN/DLDAE (NO./CC)	CUM M (%)
10.000		10.000								
5.500	7.416	5.500	7.416	1.890E+06	7.279E+06	1.529E+06	5.889E+06	8.849E+03	3.408E+04	
2.500	3.708	2.500	3.708	1.100E+06	3.212E+06	1.700E+06	5.198E+06	4.120E+04	1.203E+05	
1.600	2.000	1.600	2.000	3.850E+05	1.986E+06	1.155E+06	5.959E+06	9.191E+04	4.742E+05	
.880	1.187	.880	1.187	3.110E+05	1.198E+06	1.573E+06	6.057E+06	3.555E+05	1.369E+06	
.400	.593	.400	.593	6.790E+04	1.983E+05	6.867E+05	2.005E+06	6.209E+05	1.813E+06	
.195	.279	.195	.279	6.560E+03	2.102E+04	1.409E+05	4.517E+05	5.751E+05	1.843E+06	
.050	.099	.050	.099	5.640E+02	9.542E+02	3.427E+04	5.798E+04	1.119E+06	1.893E+06	

INTEGRAL PARAMETERS

	TOTAL	LT 1.0	GT 1.0	LT 0.01	0.01-0.1	0.1-1.0	1.0-10.0	GT 10.0
MASS (UG/DNM3)	3.761E+06	2.0	98.0	0.0	.0	2.0	98.0	0.0
SURFACE (UM2/CC)	6.898E+06	12.5	87.5	0.0	.5	12.0	87.5	0.0
NUMBER (NO./CC)	2.812E+06	82.3	17.7	0.0	39.8	42.5	17.7	0.0

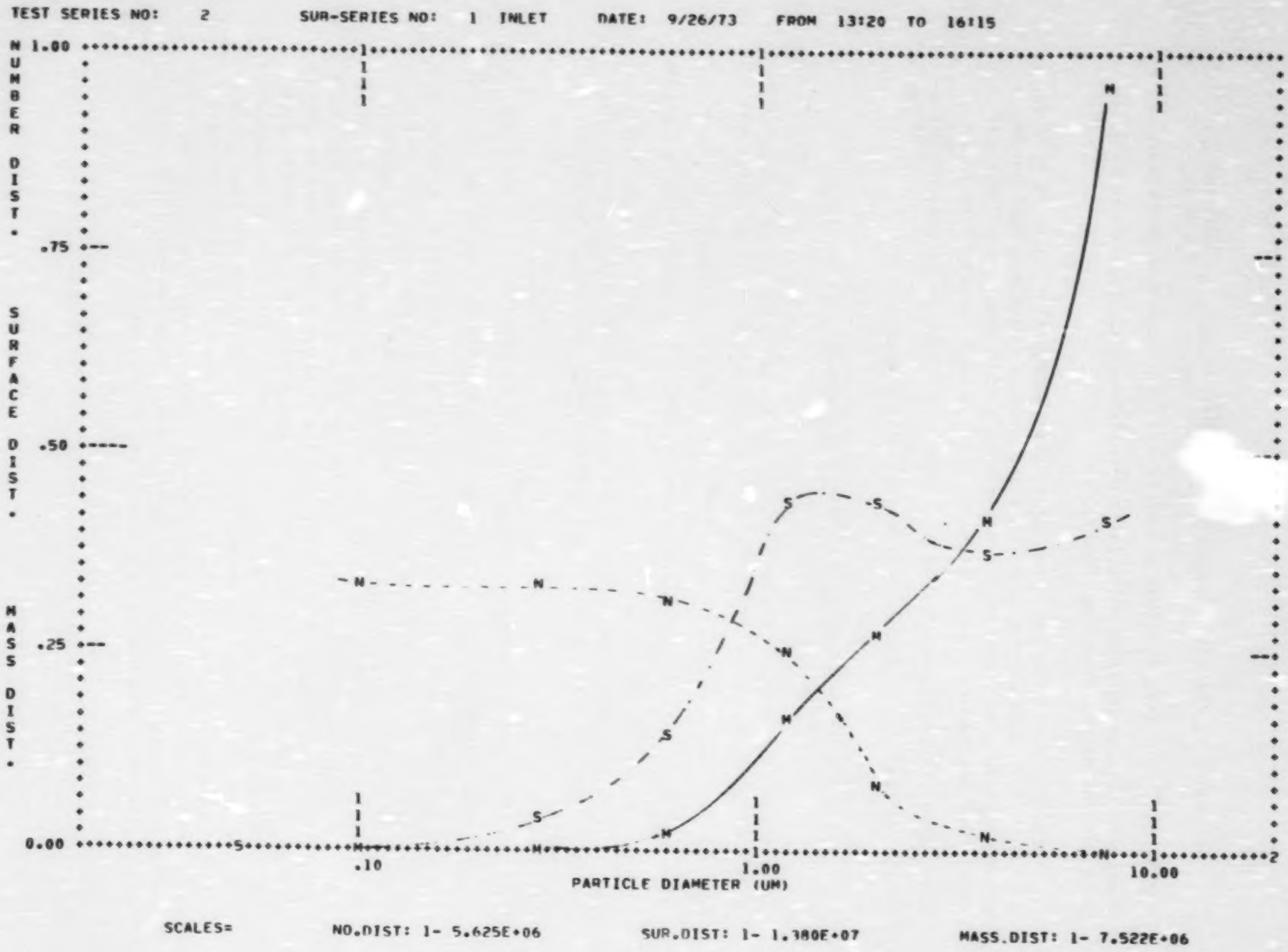


Figure 1 - Plot of Particle Size Distribution Data

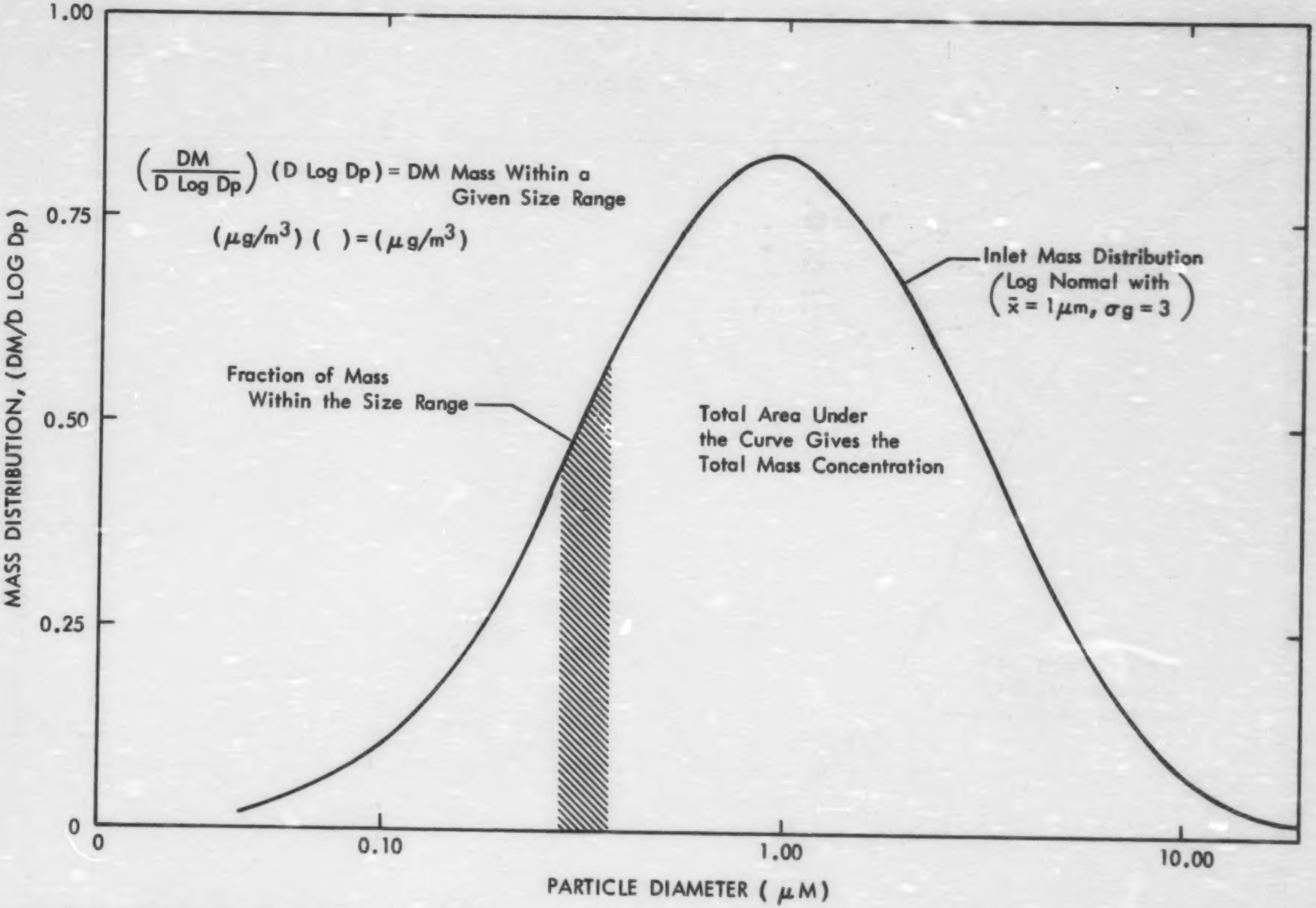
In Figure 1, the differential mass $\frac{\Delta M}{\Delta \log D_{ae}}$ surface $\frac{\Delta S}{\Delta \log D_{ae}}$ and number $\frac{\Delta N}{\Delta \log D_{ae}}$ distributions are plotted as a function of aerodynamic diameters (D_{ae}). The interpretation and usefulness of these plots will be given in the discussions that follow.

Figure 2 shows the lognormal mass distribution ($\bar{X} = 1\ \mu m$, $\sigma g = 3$) of a hypothetical source. The quantity of interest is mass per unit volume within a given size range. Since the particle size ranges over four decades, we have to use a $\log_{10}$ scale on the abscissa. Since there is no mass concentration associated with a given size, we need to plot $\frac{\Delta M}{\Delta \log D_{ae}}$ on the ordinate as suggested by the following equation.

$$\left(\frac{\Delta M}{\Delta \log D_{ae}}\right)\left(\Delta \log D_{ae}\right) = \Delta M \text{ mass within a given range}$$

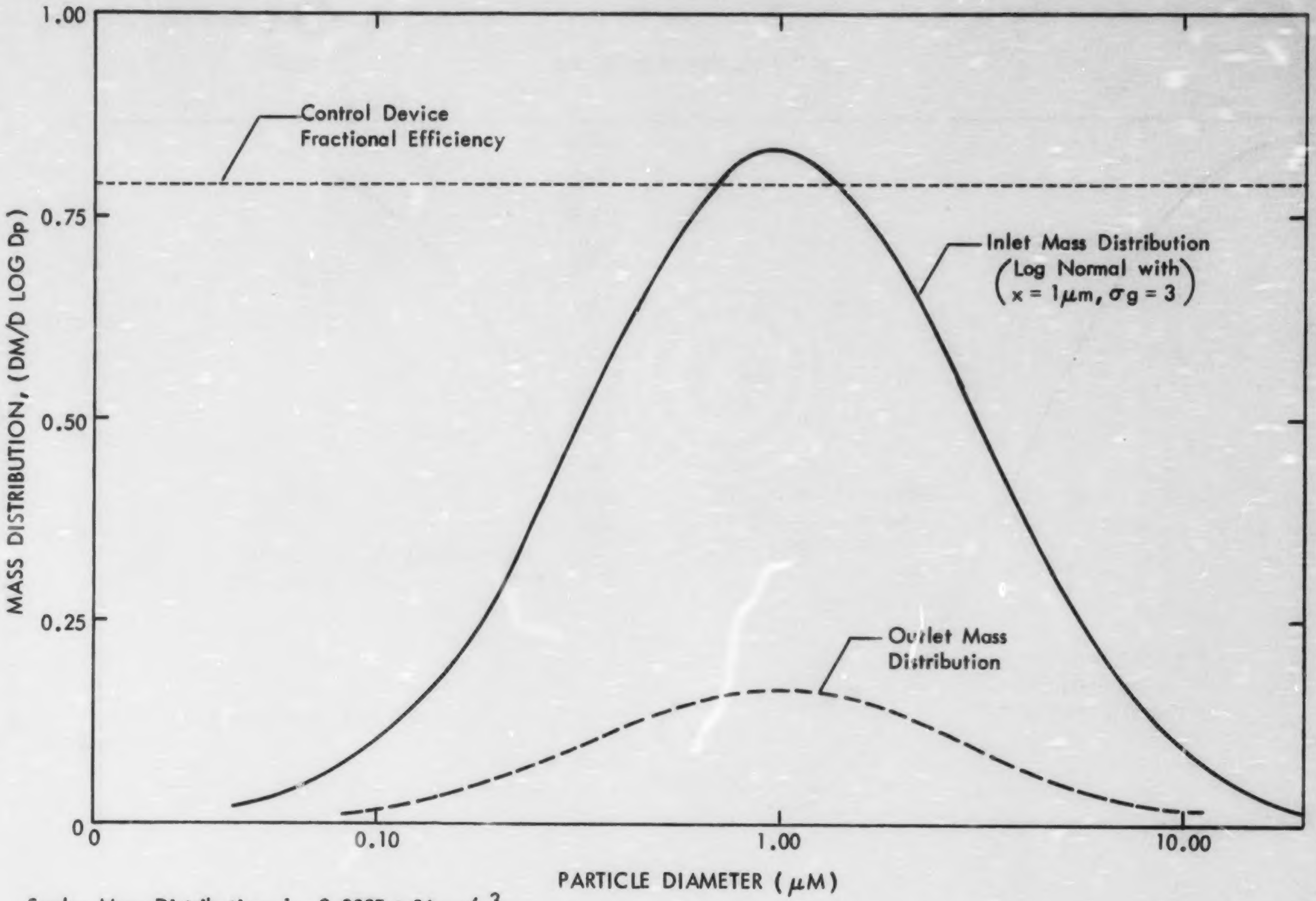
If we divide the above equation by total mass concentration, the right hand side then represents the fraction of mass within a given size range, and the distribution function density $\frac{\Delta M}{\Delta \log D_{ae}}$ becomes dimensionless. If we plot $\frac{\Delta M}{\Delta \log D_{ae}}$ with linear scale versus aerodynamic diameter with log scale, the area under the curve represents fraction of mass within the size range. The mode of this curve as well as the percentage mass within a given size range can be visually estimated and easily interpreted which is the main purpose of a graph.

Another useful feature of the present plots results from normalization of ordinate $\frac{\Delta M}{\Delta \log D_{ae}}$ by the total mass of the distribution. If we draw inlet and outlet distributions with one scale (i.e., divide the ordinate with total inlet mass concentration), the outlet distribution will be usually very close to the abscissa and cannot reveal all its features (see Figure 3). However, by choosing the total of distribution mass as its scale factor, the effect of mass concentration on the plots is eliminated, and inlet and outlet size distribution curves show only relative mass concentrations within the size ranges. If the control device collection efficiency is independent of particle size, then inlet and outlet particle size distribution will be the same. Therefore, normalizing ordinates with total mass concentration makes inlet and outlet particle size distribution curves coincide with one another. So we find that normalized size distribution curves will coincide with each other (irrespective of total mass concentration) when their size distributions are the same, and vice versa.



Scale: 1 = Total Mass Concentration ($\mu g/m^3$)

Figure 2 - Inlet Mass Distributions of a Hypothetical Source/Collector Combination



Scale: Mass Distribution: 1 - 2.000E + 06μg/m^3

Figure 3 - Inlet and Outlet Mass Distributions of a Hypothetical Source/Collector Combination Whose Collector has 80% Collection Efficiency

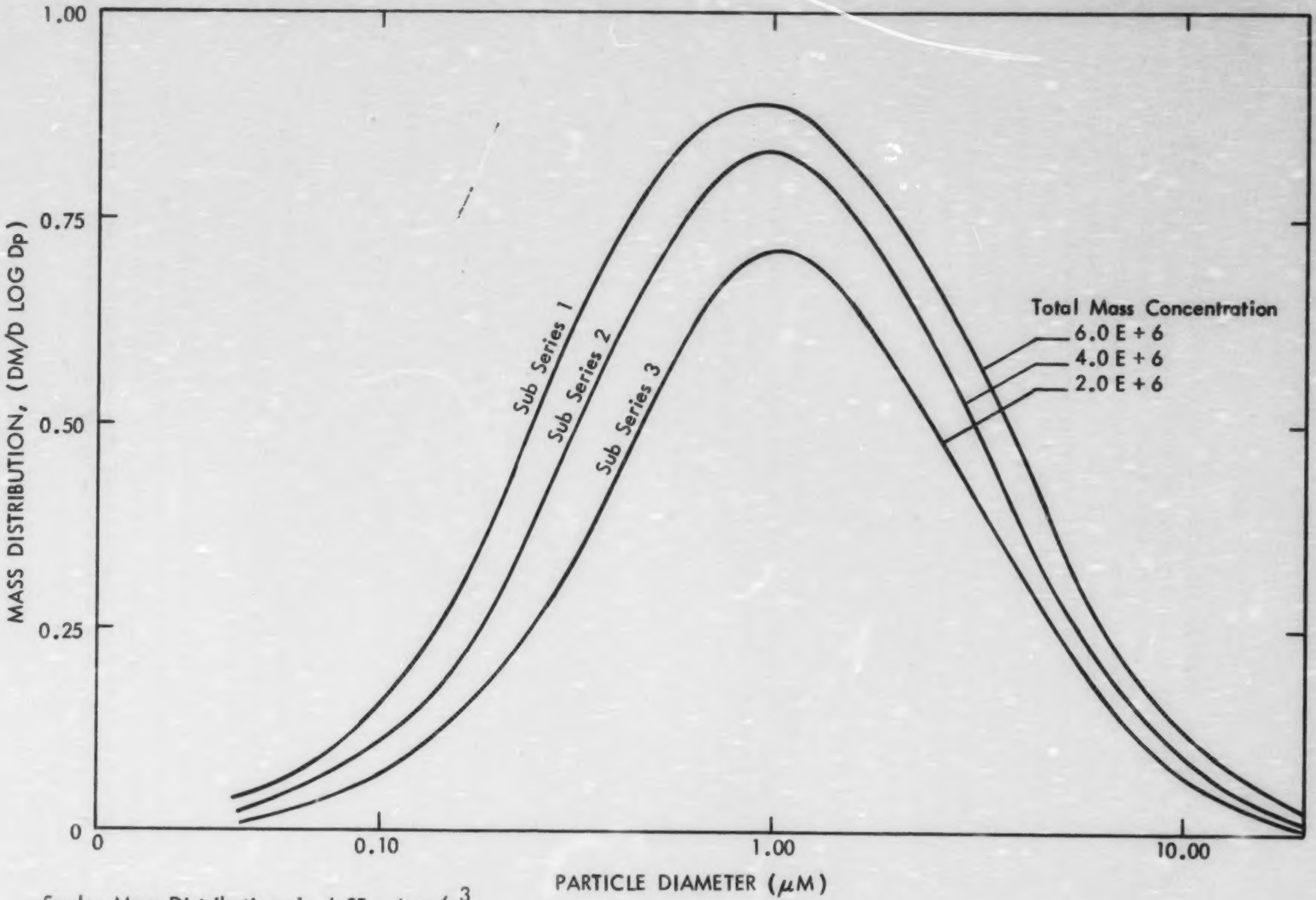
For summarizing the FPEIS data for each test series, all inlet mass distributions are plotted on one page, and all the outlet mass distributions are plotted on another page. However, instead of using total mass of each distribution as a normalizing factor, twice the average total mass of all runs in a given plot are used. This type of plot shows variation in total mass concentration as well as size distribution. For example, Figure 4 shows three inlet size distribution curves whose total mass concentration is different but whose size distribution is the same. Notice that the shape of the curves is similar due to same size distribution, but the three curves do not coincide with each other because the total mass concentration is different. Of course, if both size distribution and total mass concentration are different for these runs, then the shape as well as the location of plots would have changed.

SOME FEATURES OF FPEIS DATA

Figures 5 through 10 show the inlet and outlet mass distributions of three test series which were obtained on different coal-fired boilers; one equipped with a parallel plate ESP, the other with Nomex baghouse, and the third with a Venturi scrubber. In these figures, all the data points and their average (eye-fit) curve are shown. The eye-fit curve represents the average size distribution. The scale is twice the average total mass concentration.

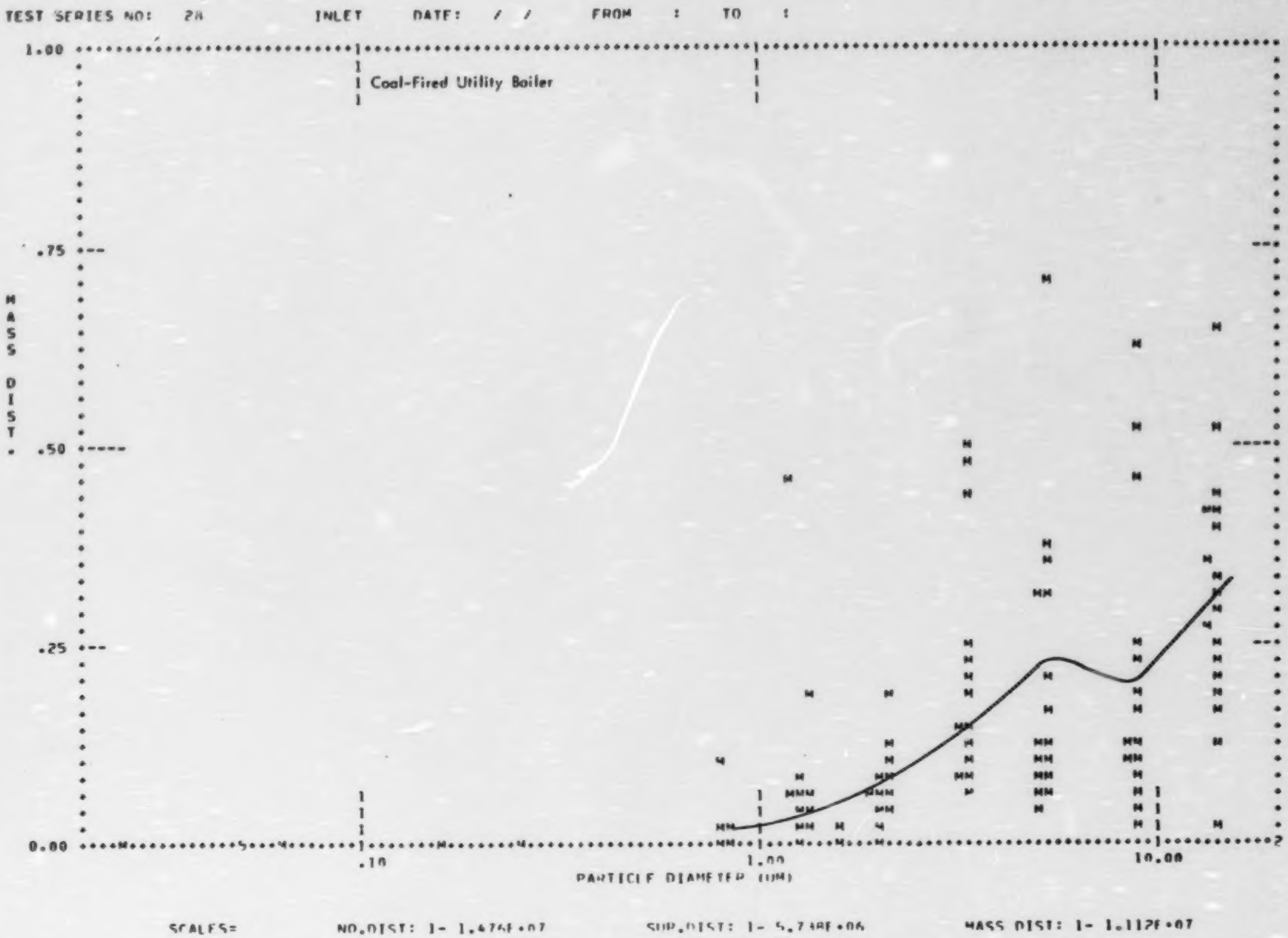
The particle size distribution at the control device inlet is influenced by source only, whereas the outlet is influenced by both the source and control device. If we just look at the inlet size distributions, i.e., Figures 5, 7, and 9, we find that the inlet size distribution as well as total mass concentration does not change from one source to the other. Coal-fired boilers emit significantly more super-micron particles. The outlet size distribution, i.e., Figures 6, 8, and 10, unlike the inlet distributions, are different from one another due to different types of control devices used. An electrostatic precipitator, which has more or less constant collection efficiency in the range larger than 1 µm, does not alter the size distribution (Figures 5 and 6). The baghouse used in test Series 36 (Figures 7 and 8) slightly alters the inlet size distribution. The larger particles are removed with greater efficiency than 1 µm particles. Venturi scrubbers, while effectively removing the super-micron particles, are ineffective for removing submicron particles. This is because inertial impaction is the primary mechanism of collection.

While coal-fired boilers emit predominantly larger particles, metallurgical processes emit primarily submicron particles. This can be seen in Figures 11 through 16, in which are shown inlet and outlet size distribution of zinc sintering furnace, open hearth furnace, and aluminum reduction cells equipped with dry ESP, steam-hydro scrubber, and spray tower/ESP, respectively. Notice here again that ESP's do not alter the size distribution but scrubbers do.



Scale: Mass Distribution: 1 - 4.0E + 6$\mu g/m^3$

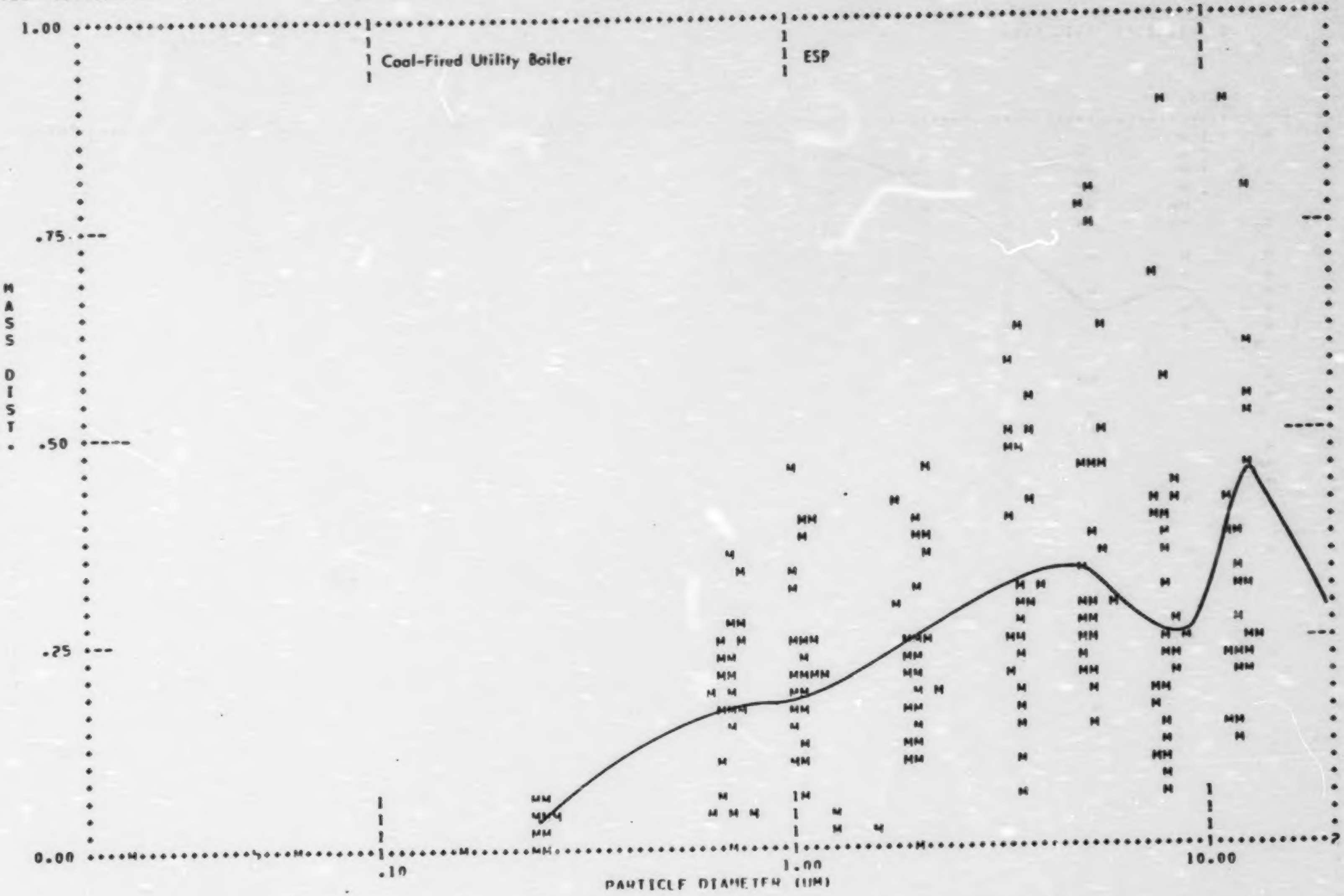
Figure 4 - Three Inlet Mass Distributions of a Hypothetical Source/Collector Combination Drawn to a Constant Scale--Size Distributions are Same but Total Mass Concentrations Different



Shannon, L. J., et al., "St. Louis/Union Electric Refuse Firing Demonstration"

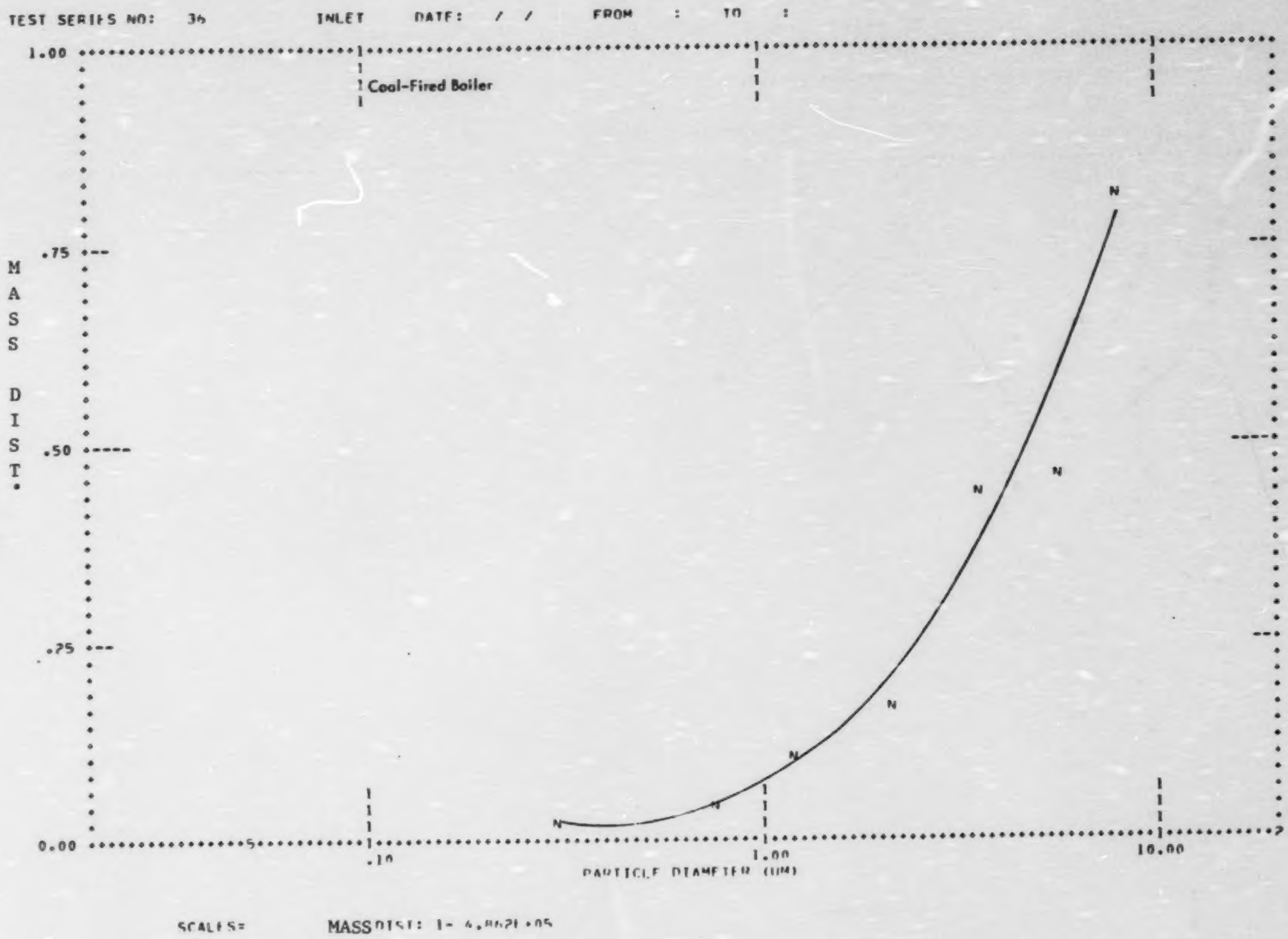
Figure 5 - Inlet Size Distribution of Test Series 28

TEST SERIES NO: 28 OUTLET DATE: / / FROM : TO :



SCALES= NO.DIST: 1- 2.864E+06 SUR.DIST: 1- 7.252E+05 MASS DIST: 1- 3.865E+05

Figure 6 - Outlet Size Distribution of Test Series 28



McKenna, J. D., et al., "Applying Fabric Filtration to Coal-Fired Industrial Boilers," EPA-650/2-74-058-a

Figure 7 - Inlet Size Distribution of Test Series 36

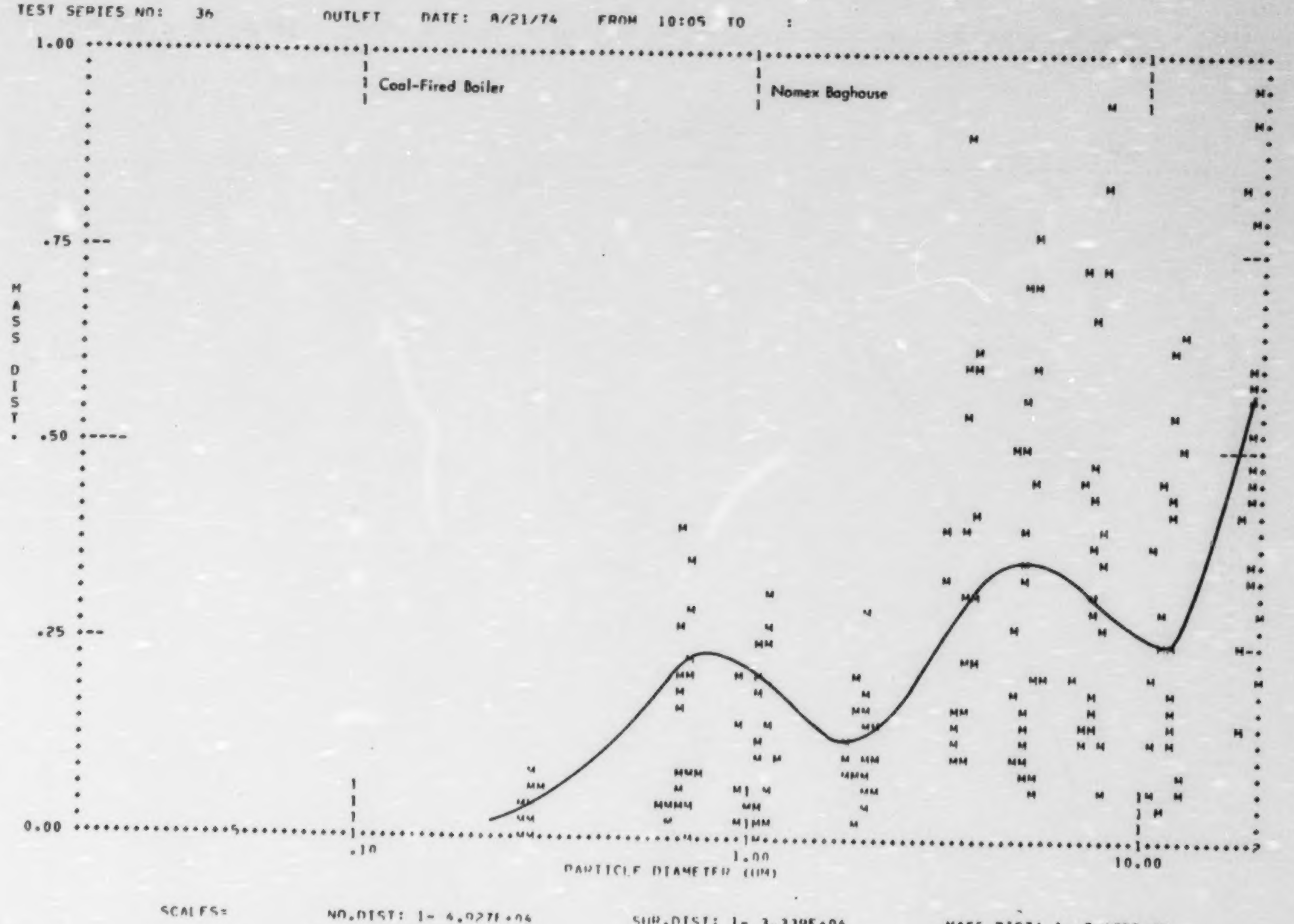
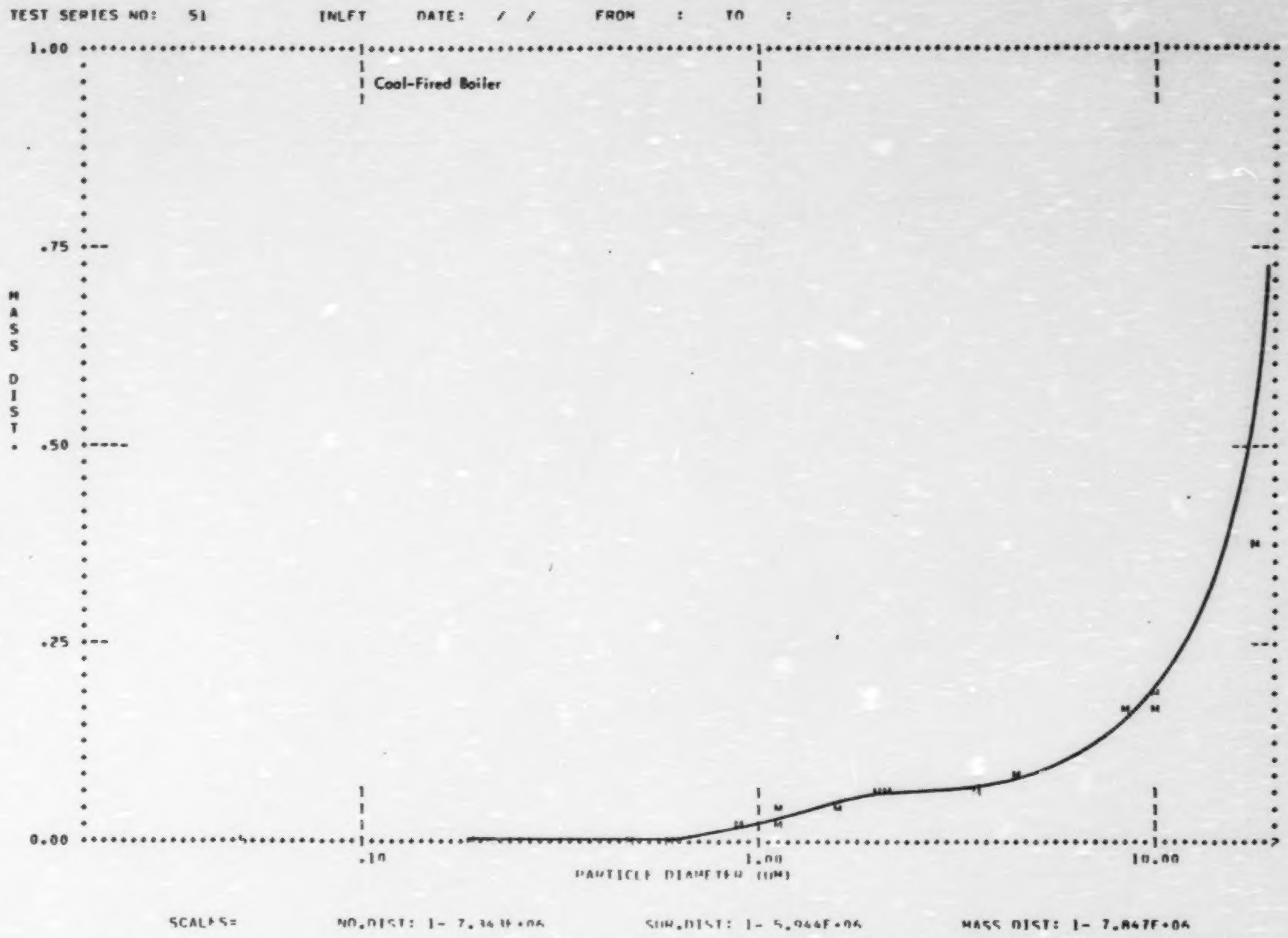


Figure 8 - Outlet Size Distribution of Test Series 36



Calvert, S., et al., "Fine Particle Scrubber Performance Tests," EPA-650/2-74-093

Figure 9 - Inlet Size Distribution of Test Series 51

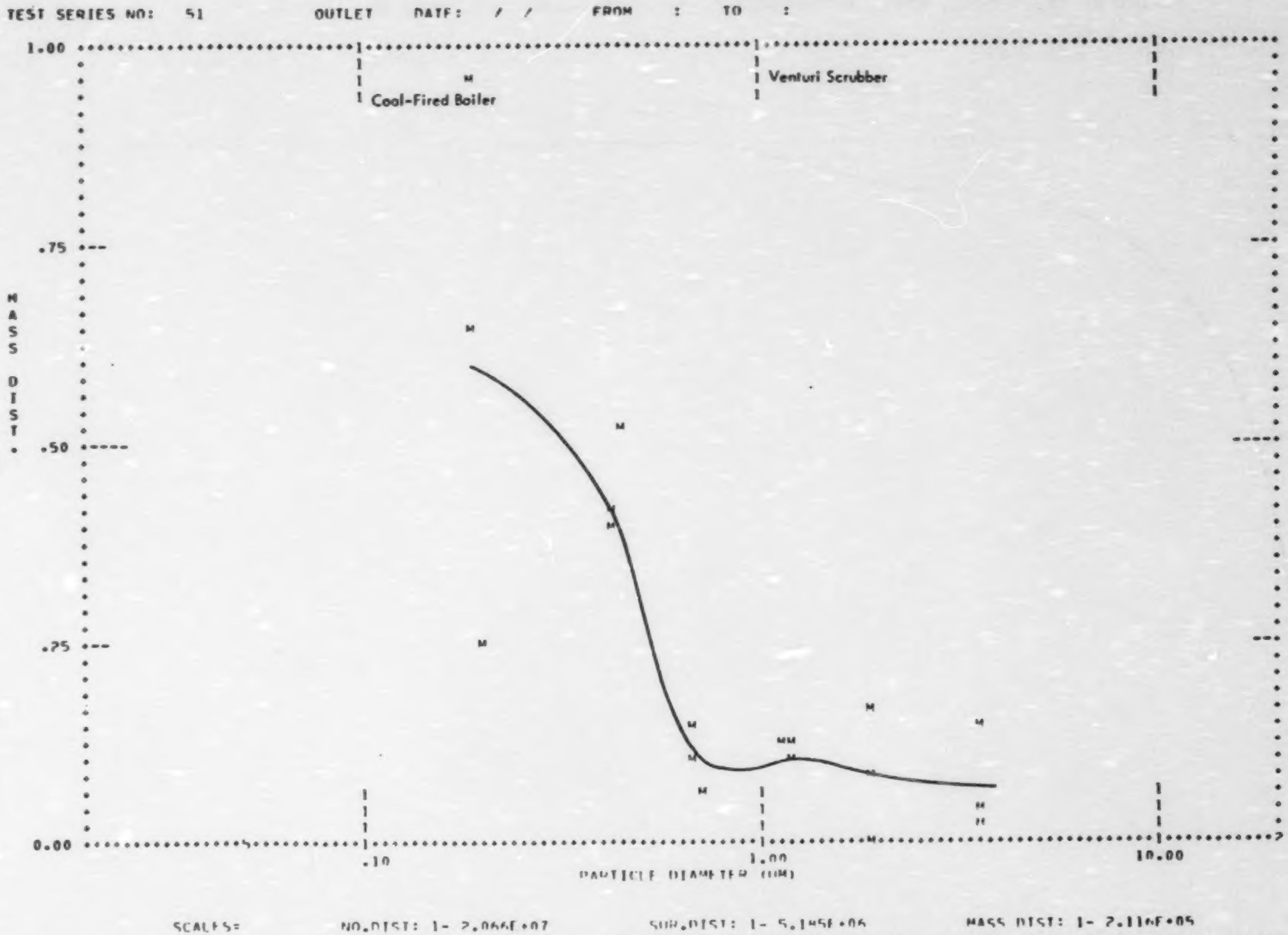
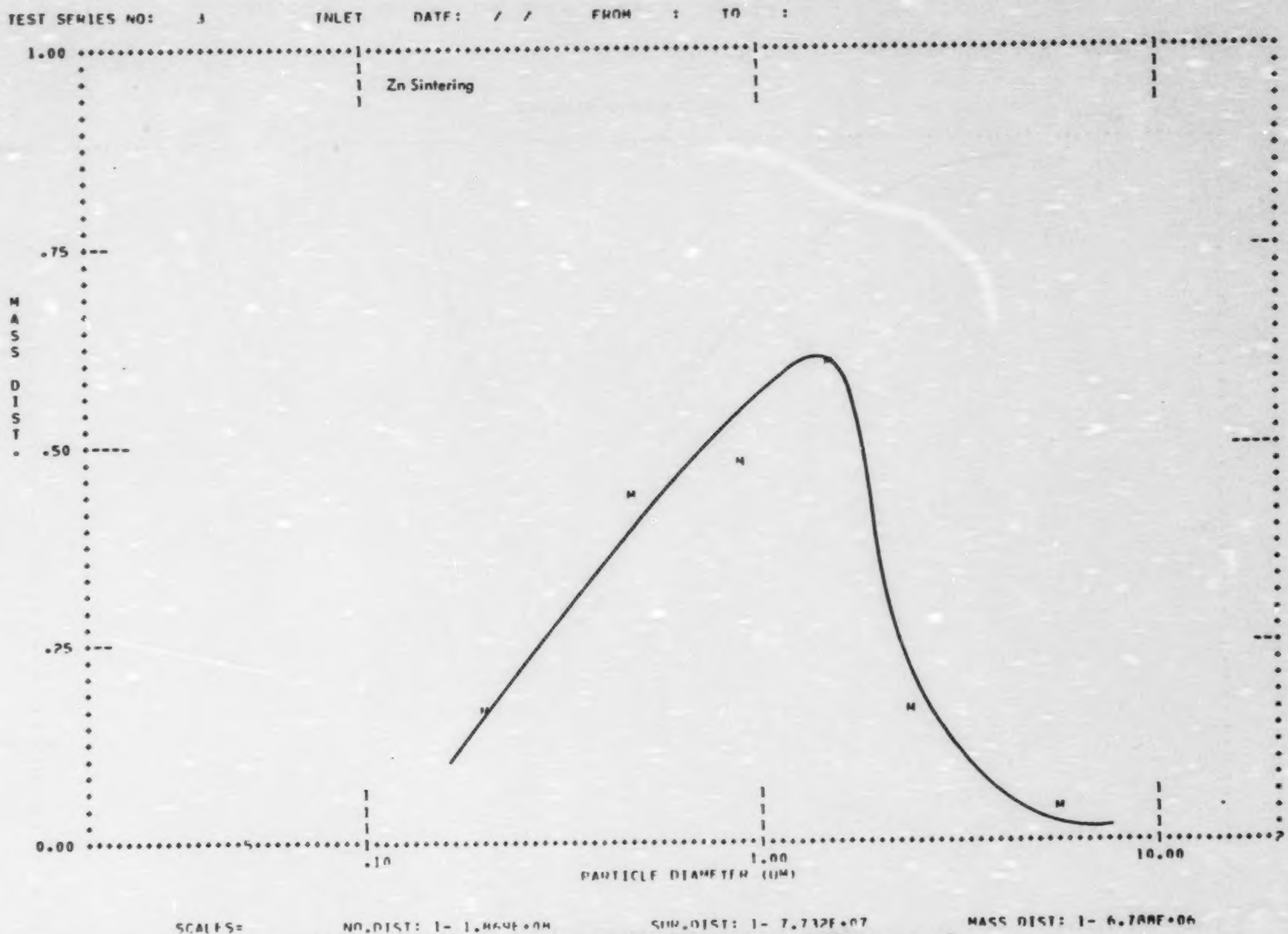


Figure 10 - Outlet Size Distribution of Test Series 51



Harris, D. B., and D. C. Drehmel, "Fractional Efficiency of Metal Fume Control as Determined by Brink Impactor," EPA/CSL (1973)

Figure 11 - Inlet Size Distribution of Test Series 3

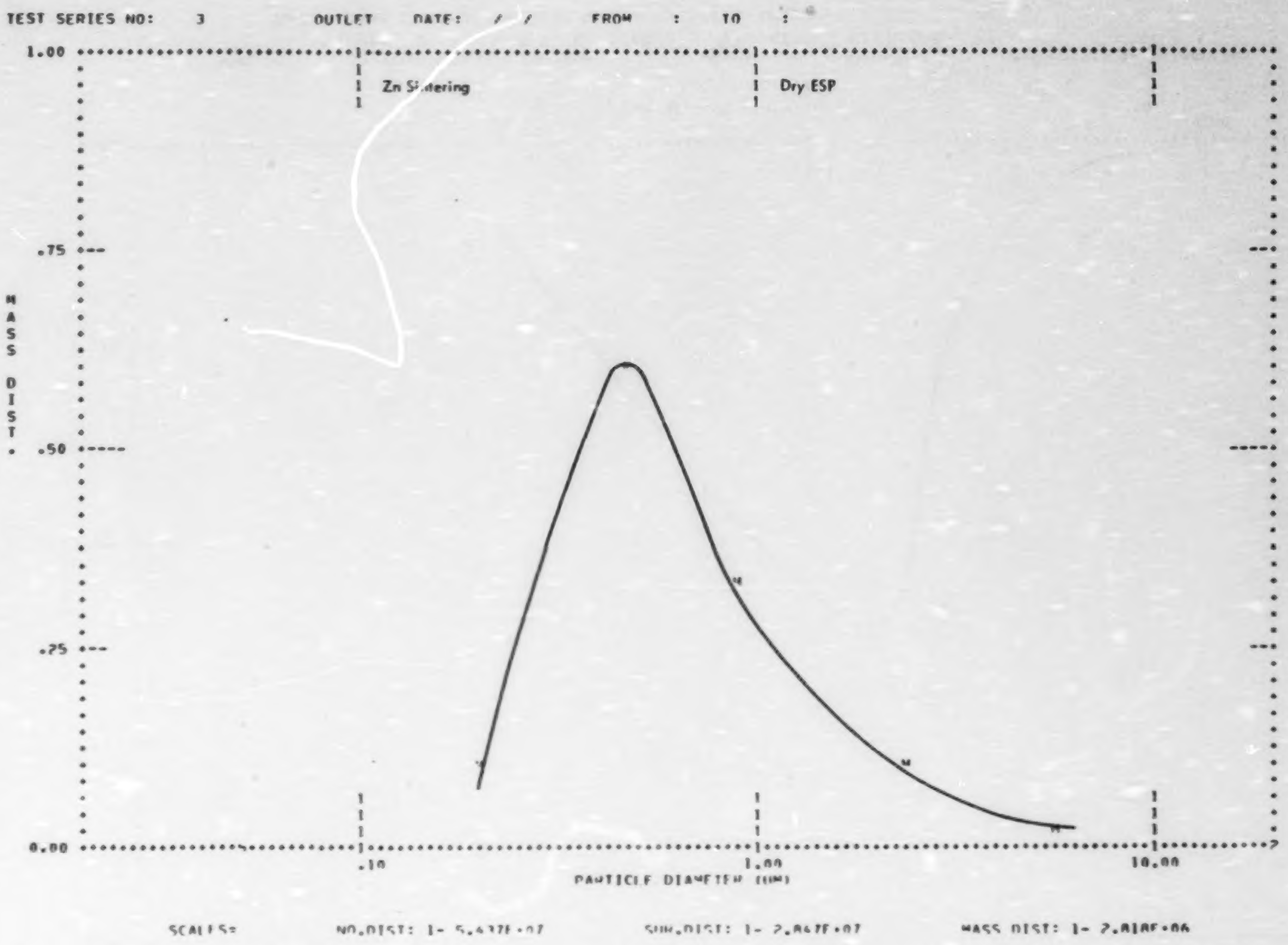
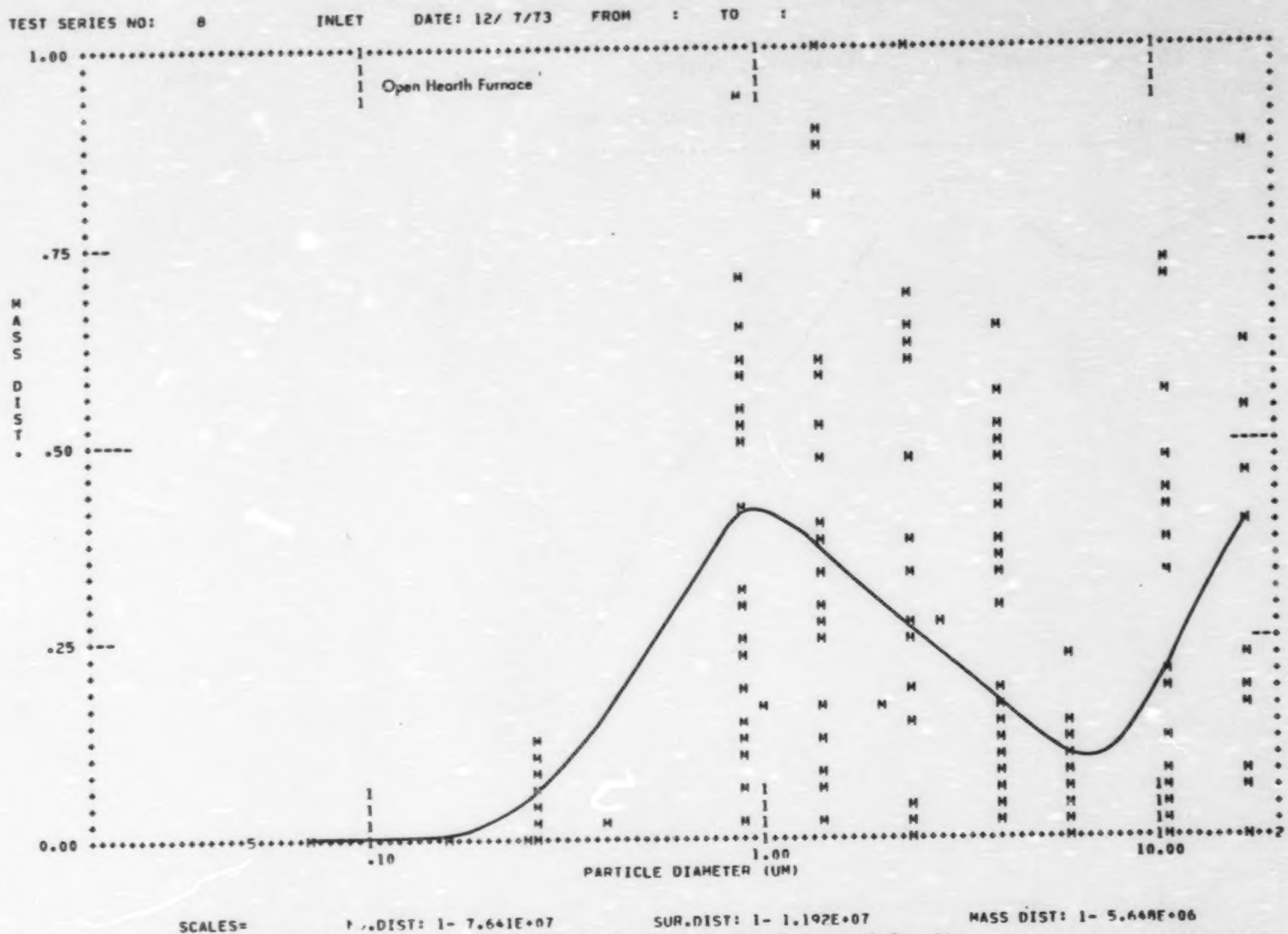


Figure 12 - Outlet Size Distribution of Test Series 3



McCain, J. D., and W. B. Smith, "Lone Star Steel Steam-Hydro Air Cleaning System Evaluation," EPA-650/2-74-028 (1974)

Figure 13 - Inlet Size Distribution of Test Series 8

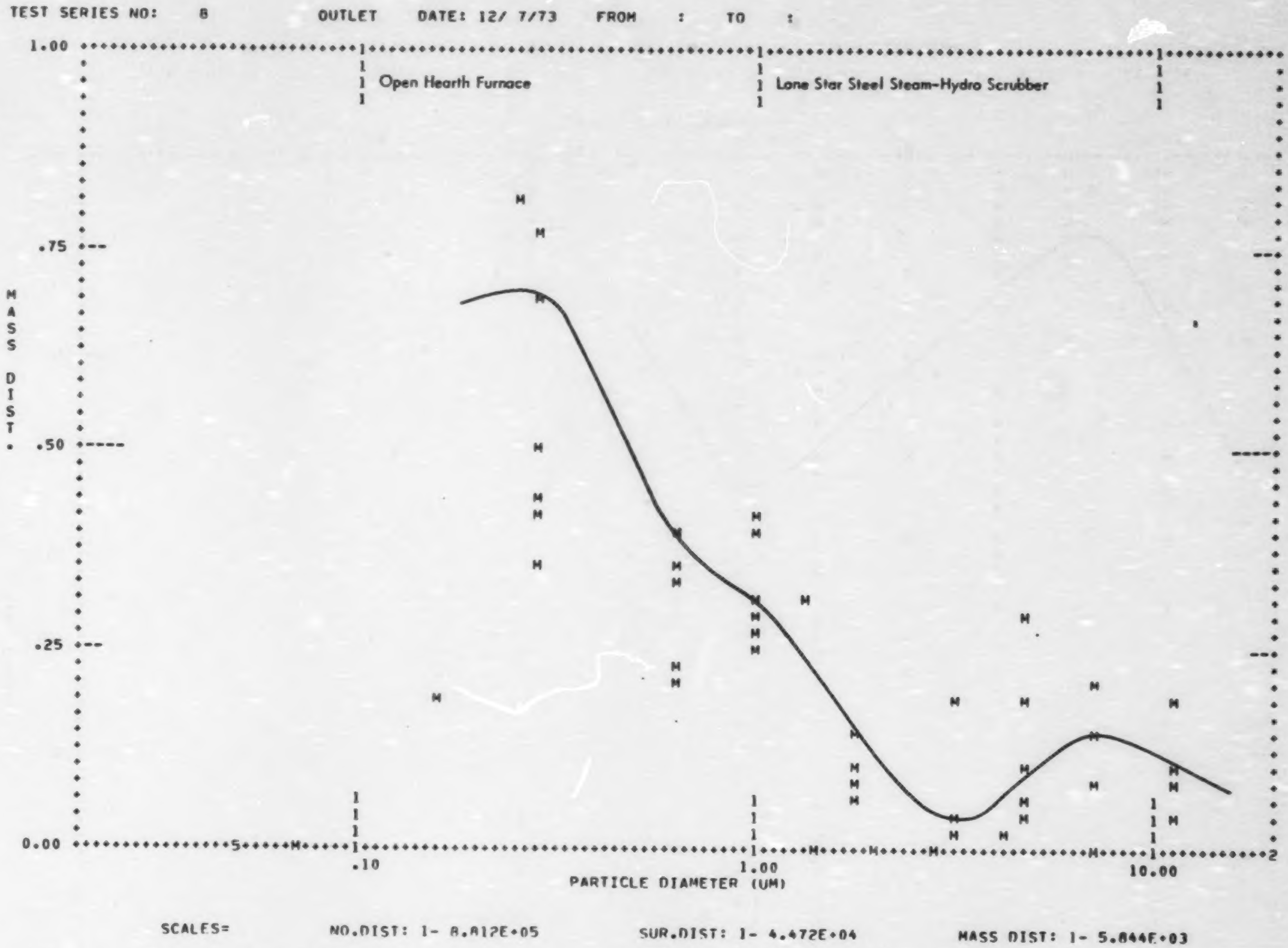
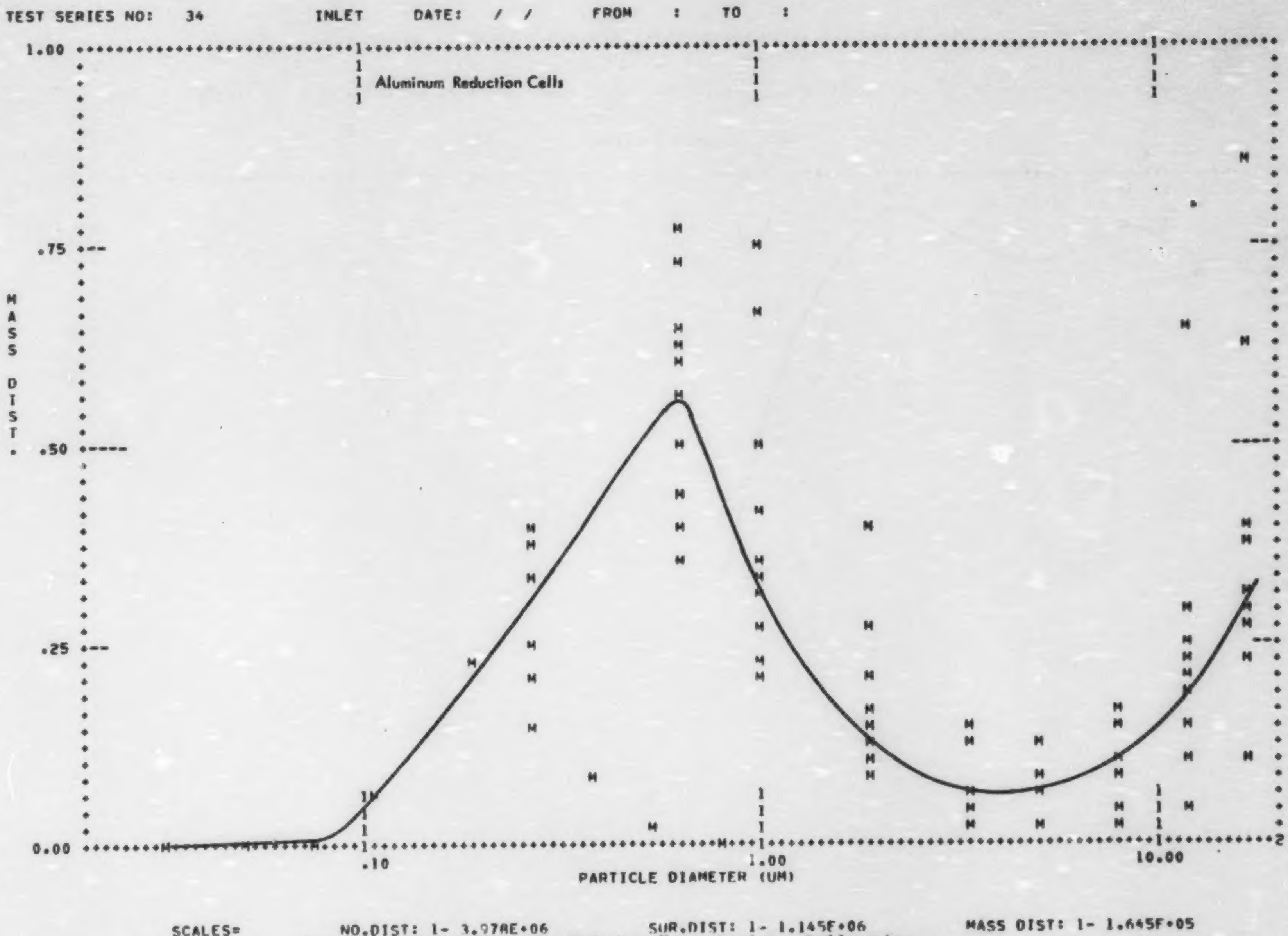


Figure 14 - Outlet Size Distribution of Test Series 8



Gooch, J. P., and J. D. McCain, "Particulate Collection Efficiency Measurements on a Wet Electrostatic Precipitator." EPA-650/2-75-033

Figure 15 - Inlet Size Distribution of Test Series 34

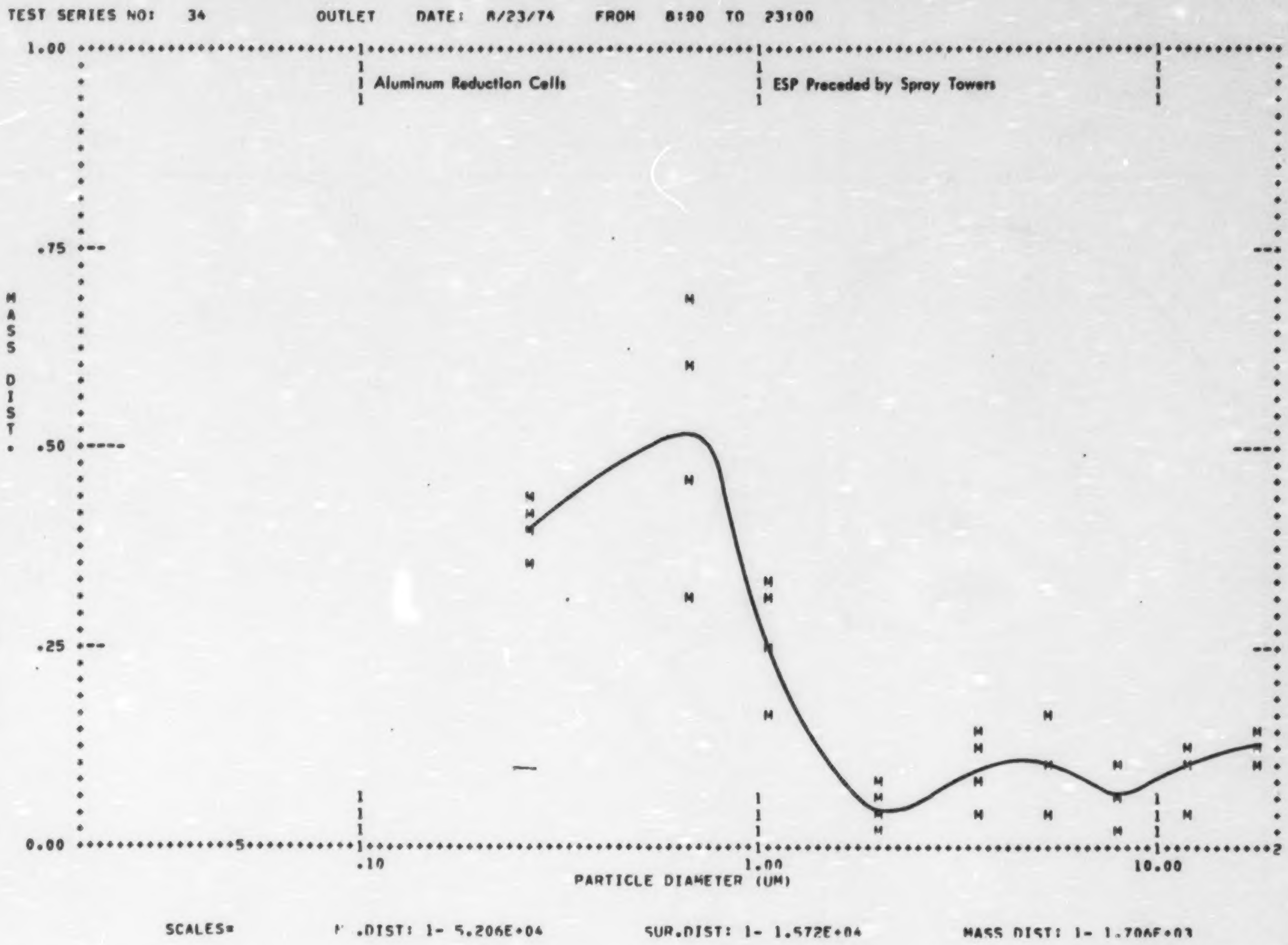


Figure 16 - Outlet Size Distribution of Test Series 34

The present data and plots can be valuable to future source testing. Even though there may be deficiencies in the measurement, the data still give a good idea of what to expect when sampling similar sources.

DATA PROCESSING

A Fortran program consisting of several subroutines has been developed, which prepares raw data to a form suitable for entering into SYSTEM 2000. This preparation involves the following steps.

Step	Process
1	Fill Missing Cards with Blank Cards
2	Duplicate Necessary Information
3	Edit: a. Check for Card Order b. Check for Obvious Errors
4	Punch New Deck or Magnetic Tape
5	Submit to SYSTEM 2000

In Step 1, the missing cards, i.e., cards unfilled at the time of coding, will be replaced with blank cards within the memory. In Step 2, whereever there is a need for duplicating information such as, say, the sampling location description or the measurement equipment description, will be duplicated. In Steps 3 and 4, after editing the deck for card order and obvious errors, the data are copied onto a magnetic tape. The editing process involves complete calculation of size distribution and total mass surface and number concentrations. If the total mass concentration is not within the range of 10^2 to 10^8 $\mu g/m^3$ or if the number concentration is not within the range of 10^2 to 10^{10} particles/cc, keypunching or coding error is suspected. All the data are carefully checked before they are copied on the magnetic tape. In the final step, the data are entered into the SYSTEM 2000, and a complete listing is obtained which will be sent to the author for his review. Any comments or changes he suggests will be made before the data are released for public use.

CLOSING COMMENTS
TO THE
FPEIS USER'S WORKSHOP

Gary L. Johnson
Project Officer
Special Studies Staff
IERL-RTP

The information presented at this workshop today represents the result of almost 2 years of effort by IERL and its contractors. It does not, however, represent the end of a project but, in reality, the beginning of one. The FPEIS must, by its very nature, be a dynamic system responding continuously to the changing needs of the user community. The comments and suggestions offered here today further underscore this point. It must be recognized, however, that the FPEIS cannot be all things to all people, but a concerted effort can and will be made to incorporate the greatest amount of user flexibility possible into the FPEIS without degrading seriously the performance of the system.

As you have seen, the input and basic output formats of the FPEIS are generally not too difficult to use. We agree that improvements are needed in both, but there is one further point that the user community must realize: FPEIS is merely a tool; it cannot do your work for you nor was it ever intended to do so. Some preprocessing of data will be necessary, but we do not believe that any testing organization will find it to be burdensome. Further, we believe that no reputable testing organization would submit completely raw, unchecked data to FPEIS or anywhere, except under very extreme circumstances. FPEIS is intended to provide the total user community with a centralized means of storing data based upon a common protocol. Such a protocol inherently poses some limitations or restrictions, but much of the problem with data analysis today stems from the fact that no two testing organizations report data in the same manner or, for that matter, even report the same data. Comparison of testing results has become a difficult or, in some cases, an impossible task.

The FPEIS offers the user the opportunity to access a wide spectrum of fine particle emissions data presented and stored on a common basis. As the FPEIS is expanded, a large catalog of inquiry routines will be available to users to interrogate the data base. The possible variations in selection criteria are many and are limited only by the imagination of the user and the physical constraints of the computer. We will continue to look to you, the FPEIS user, for guidance in developing new output modules. From today's discussion, it is likely that an early program module to be developed will be one to produce fractional efficiencies for various source and collector combinations. Another one will be a statistical analysis package. We invite your suggestions on any new output modules needed.

This, then, is the Fine Particle Emissions Information System. It is a new approach to an old problem of assimilating data. With your help and patience, the FPEIS will be a significant asset to continuing fine particle control technology research and development.

The workshop is adjourned.

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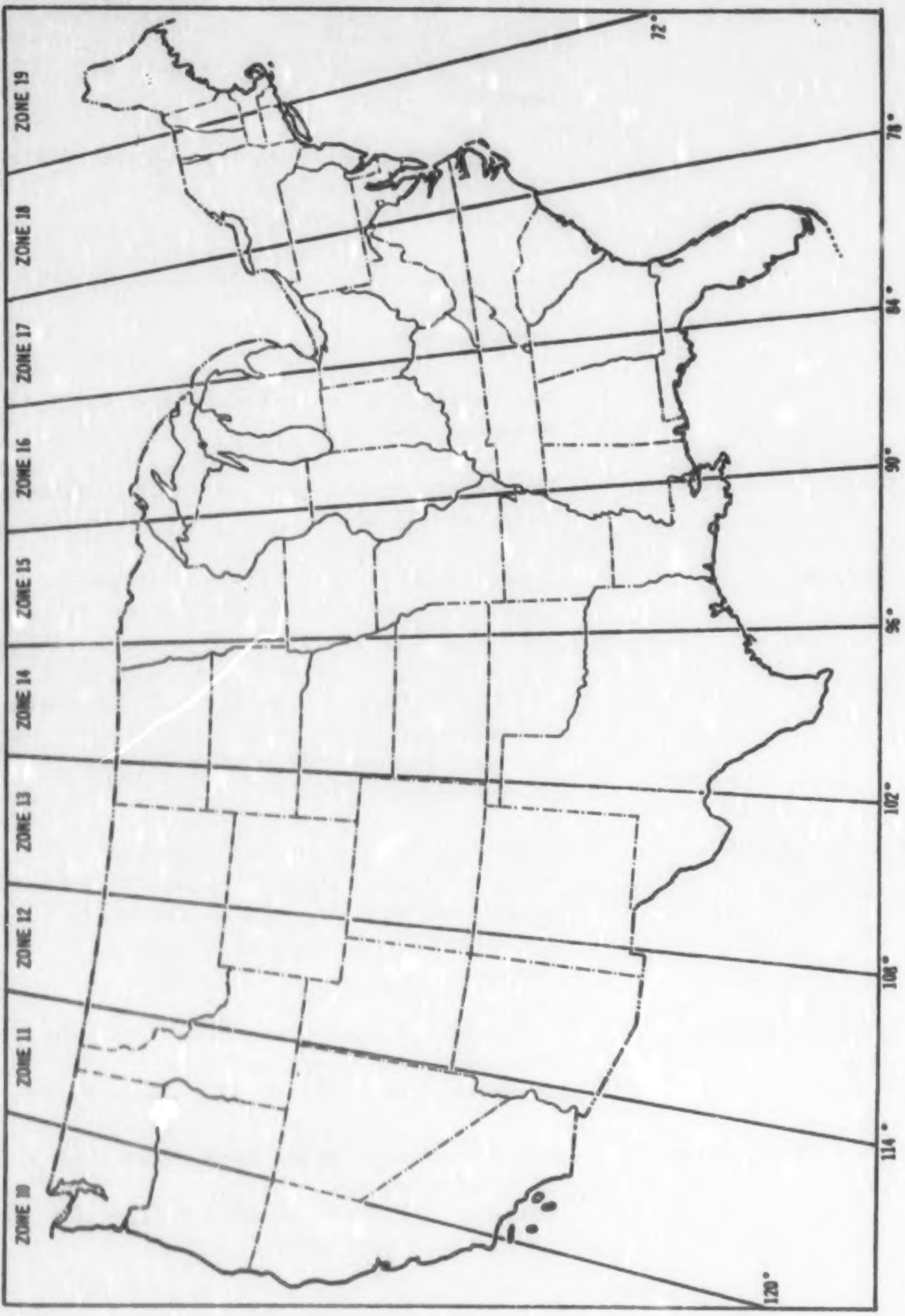
APPENDIX A

FPEIS DATA ELEMENT DEFINITIONS

FPEIS DATA ELEMENT DEFINITIONS

100* Source Category	Source identifier. (See Appendix B, SCC, Category Name I.) Example: EXTCOMB BOILER
110* Source Characteristics	The principal repeating group in this data base which includes statements 120 through 270 and repeating group 300. Data are not entered in this category but this category is used merely as an introduction to subcategories.
120* Type of Operation	Specific operation which was tested. (See Appendix B, SCC, Category Name II.) Example: ELECTRIC GENERATION
130* Operating Mode Class	Size and characteristics of operation. (See Appendix B, SCC, Category Name IV.) Example: LARGER THAN 100 MBTU PULV DRY
140* Feed Material Class	Specific type of material used as fuel feed. (See Appendix B, SCC, Category Name III.) Example: BITUMINOUS COAL
150* Source Name	Specific source tested within the site designated in 200. Example: MERAMEC UNIT 1
200* Site Name	Complete and unique name of company (and, if applicable, plant or station). Example: UNION ELECTRIC MERAMEC STATION
210* UTM-X	UTM horizontal coordinate as shown on USGS maps with scales less than 1:62,500. Example: 0473
220* UTM-Y	UTM vertical coordinate as shown on USGS maps with scales less than 1:62,500. Example: 3921

230* Zone Location	Universal Transverse Mercator Coordinates (UTM) zone location as found on United States Geological Survey (USGS) maps showing UTM coordinates (see Figure A-1). Example: 12
240* Address	Street number and street name. (Abbreviate if necessary, see Table A-1.) Example: 1234 RIVER ROAD
250* City	City name. (Abbreviate if necessary, see Table A-1.) Example: ST. LOUIS
260* State	Two letter code for state. (See Table A-2.) Example: MO
270* Zip Code	Five digit number designating postal area. Example: 63102
300* Test Series	A repeating group within the principal repeating group (110). This group defines a test series and includes statements 310 through 350, statement 1800, and lower level repeating groups 400 and 700. Data are not entered in this category but this category is used as an introduction to subcategories.
310* Test Series Number	Numerical identifier for specific test series for the data to follow. Each test series will be assigned an identifier from a master file listing as received. Example: 14
320* Test Series Reference	Reference of the report from which the data have been extracted. Example: EPA 650/2-74-031, April 1974
330* Name of Testing Group	Complete and uniquely identifiable name of testing group. Example: MIDWEST RESEARCH INSTITUTE (not MRI)



ZONE 10
120°
ZONE 11
114°
ZONE 12
108°
ZONE 13
102°
ZONE 14
96°
ZONE 15
90°
ZONE 16
84°
ZONE 17
78°
ZONE 18
72°
ZONE 19
120°
114°
108°
102°
96°
90°
84°
78°
72°

Figure A-1. UTM grid zones in the contiguous United States.

Table A-1. ABBREVIATIONS FOR STREET DESIGNATORS AND FOR WORDS THAT APPEAR FREQUENTLY IN PLACE NAMES

Word	Abbreviation	Word	Abbreviation	Word	Abbreviation	Word	Abbreviation
Academy	ACAD	Expressway	EXPY	Lane	LN	San	SN
Agency	AGNCY	Extended	EXT	Light	LGT	Santa	SN
Airport	ARPRT	Extension	EXT	Little	LTL	Santo	SN
Alley	ALY	Fall	FL	Loaf	LF	School	SCH
Annex	ANX	Falls	FLS	Locks	LCKS	Seminary	SMNRY
Arcade	ARC	Farms	FRMS	Lodge	LDG	Shoal	SHL
Arsenal	ARSL	Ferry	FRY	Lower	LWR	Shoals	SHLS
Avenue	AVE	Field	FLD	Manor	MNR	Shode	SHD
Bayou	BYU	Fields	FLDS	Meadows	MDWS	Shore	SHR
Beach	BCH	Flats	FLT	Meeting	MTG	Shores	SHRS
Bend	BND	Ford	FRD	Memorial	MEM	Siding	SDG
Big	BG	Forest	FRST	Middle	MDL	South	S
Black	BLK	Forge	FRG	Mile	MLE	Space Flight Center	SFC
Boulevard	BLVD	Fork	FRK	Mill	ML	Spring	SPG
Bluff	BLF	Forks	FRKS	Mills	MLS	Springs	SPGS
Bottom	BTM	Fort	FT	Mines	MNS	Square	SQ
Branch	BR	Fountain	FTN	Mission	MSN	State	ST
Bridge	BRG	Freeway	FWY	Mound	MND	Station	STA
Brook	BRK	Furnace	FURN	Mount	MT	Street	ST
Burg	BG	Gardens	GDNS	Mountain	MTN	Stream	STRM
Bypass	BYP	Gateway	GTWY	National	NAT	Sulphur	SLPHR
Camp	CP	Glen	GLN	Neck	NCK	Summit	SMT
Canyon	CYN	Grand	GRND	New	NW	Switch	SWCH
Cape	CPE	Great	GR	North	N	Tannery	TNRY
Causeway	CSWY	Green	GRN	Orchard	ORCH	Tavern	TVRN
Center	CTR	Ground	GRD	Palms	PLMS	Terminal	TERM
Central	CTL	Grove	GRV	Park	PK	Terrace	TER
Church	CHR	Harbor	HBR	Parkway	PKY	Ton	TN
Churches	CHRS	Haven	HVN	Pillar	PLR	Tower	TWR
Circle	CIR	Heights	HTS	Pines	PNES	Town	TWN
City	CY	High	HI	Place	PL	Trail	TRL
Clear	CLR	Highlands	HGLDS	Plain	PLN	Trailer	TRLR
Cliffs	CLFS	Highway	HWY	Plains	PLNS	Tunnel	TUNL
Club	CLB	Hill	HL	Plaza	PLZ	Turnpike	TPKE
College	CLG	Hills	HLS	Port	PRT	Upper	UPR
Corner	COR	Hollow	HOLW	Point	PT	Union	UN
Corners	CORS	Hospital	HOSP	Prairie	PR	University	UNIV
Court	CT	Hot	H	Ranch	RNCH	Valley	VLY
Courts	CTS	House	HSE	Ranches	RNCHS	Viaduct	VIA
Cove	CV	Inlet	INLT	Rapids	RPDS	View	VW
Creek	CRK	Institute	INST	Resort	RESRT	Village	VLG
Crescent	CRES	Island	IS	Rest	RST	Ville	VL
Crossing	XING	Islands	IS	Ridge	RDG	Vista	VIS
Dale	DL	Isle	IS	River	RIV	Water	WTR
Dam	DM	Junction	JCT	Road	RD	Wells	WLS
Depot	DPO	Key	KY	Rock	RK	West	W
Divide	DIV	Knolls	KNLS	Rural	R	White	WHT
Drive	DR	Landing	LNDG	Saint	ST	Works	WKS
East	E	Lake	LK	Sainte	ST	Yards	YDS
Estates	EST	Lakes	LKS				

Table A-2. TWO-LETTER STATE ABBREVIATIONS

Alabama	AL	Idaho	ID	Montana	MT	Rhode Island	RI
Alaska	AK	Illinois	IL	Nebraska	NE	South Carolina	SC
Arizona	AZ	Indiana	IN	Nevada	NV	South Dakota	SD
Arkansas	AR	Iowa	IA	New Hampshire	NH	Tennessee	TN
California	CA	Kansas	KS	New Jersey	NJ	Texas	TX
Canal Zone	CZ	Kentucky	KY	New Mexico	NM	Utah	UT
Colorado	CO	Louisiana	LA	New York	NY	Vermont	VT
Connecticut	CT	Maine	ME	North Carolina	NC	Virginia	VA
Delaware	DE	Maryland	MD	North Dakota	ND	Virgin Islands	VI
District of Columbia	DC	Massachusetts	MA	Ohio	OH	Washington	WA
Florida	FL	Michigan	MI	Oklahoma	OK	West Virginia	WV
Georgia	GA	Minnesota	MN	Oregon	OR	Wisconsin	WI
Guam	GU	Mississippi	MS	Pennsylvania	PA	Wyoming	WY
Hawaii	HI	Missouri	MO	Puerto Rico	PR		

340* Series Start Date	Start date for the series in the format month/day/year. Example: 05/12/75
350* Series Finish Date	Finish date for the test series in the format month/day/year. Example: 05/23/75
400* Control Devices	A repeating group within the repeating group 300. This group defines the control device or devices and includes statements 410 through 460 and lower level repeating groups 500 and 600. Data are not entered in this category but this category is used as an introduction to subcategories.
410* Generic Device Type	General classification of control device in operation during test. The generic device types will only be from the following standard nomenclature: ESP, Cyclone, Wet Scrubber, Fabric Filter, Other, None.
420* Device Class	A designation of the state of development of the control device using only the following standard nomenclature: Conventional, Novel, Prototype, Pilot Scale (see text for discussion of these designations).
430* Device Category	A more specific definition of the generic device as noted in 410. Standard nomenclature will be used from Table A-3. For the appropriate generic device, only name as indicated or combination of words as indicated in Table A-3, will be used. Example: GAS ATOMIZED SPRAY SCRUBBER
440* Device Commercial Name	Commercial or given name of the device. Example: STEAM-HYDRO SCRUBBER
450* Manufacturer	Complete name of manufacturer. Example: RESEARCH COTTRELL

Table A-3. DEVICE CATEGORY

ESP	Cyclone	Wet scrubber	Fabric filter
1. Wet	1. Single	1. Plate	1. Continuously cleaned
2. Dry	2. Multiple	2. Massive packing	2. Intermittently cleaned
3. Hotside	3. Recirculating	3. Fibrous packing	3. Reverse air
4. Coldside	4. Mech. rotor	4. Preformed spray	4. Mechanical shake or vibrate
5. Plate		5. Gas atomized spray	5. Hi pressure air
6. Pipe		6. Centrifugal	6. Low pressure air
7. Hi voltage		7. Baffle	7. Other
8. Low voltage		8. Impingement and entrainment	
9. Single chamber		9. Mechanically aided	
10. Double chamber		10. Moving bed	
11. Other		11. Combination	

460* Device Description	One line qualifier to allow insertion of additional information for unusual or hybrid devices not completely described in 410, 420, 430. Example: ATOMIZED SPRAY IS SUBJECTED TO ELECTRICAL FIELD FOR CHARGING OF DROPLETS
500* Design Specifications	A repeating group within the repeating group 400. This group defines the design specifications for the control device and includes statements 510 and 520. Data are not entered in this category but this category is used as an introduction to subcategories.
510* Specification Type	Descriptive word for specification, as appropriate for generic device type (410). Table A-4 is a tabulation of specifications which should be entered as a minimum. Additional specification types required for more complete characterization of the device may be included. Example: DESIGN VOLUME
520* Specification Value	The numerical value corresponding to the specification type (510) entered only as metric units indicated in Table A-4 or as required for additional types. Example: 20,000 DNM^3/min
600* Operating Parameters Typical	A repeating group within the repeating group 400. This group defines the typical or average value of the operating parameters of the device(s) tested. This group includes statements 610 and 620. Data are not entered in this category but the category is used as an introduction to subcategories. Note: If there is only one test run in the test series then data for parameter type and value should be entered as appropriate in statements 610 and 620. For test series which include more than one test run and for which the operating parameters varied then the values of these parameters for the second and subsequent runs should be identified and entered as text in statement 1700 (subseries remarks).

Table A-4. SPECIFICATION TYPE

ESP	Units	Cyclone	Units
Design volume	DNM^3/min	Design volume	DNM^3/min
Design ΔP	cm WG	Design ΔP	cm WG
Design temperature	°C	Design temperature	°C
Design efficiency	%	Design efficiency	%
Design inlet grain loading	mg/m^3	Design inlet grain loading	mg/m^3
Total power consumption	kw	Total power consumption	kw
Bulk linear velocity	m/s	Entrance velocity	m/s
Number of sections	number	Number of tubes	number
Design applied voltage	volts	Cyclone diameter	m
Aspect ratio	dimensionless	Length/diameter ratio	dimensionless

Table A-4. (Concluded)

Scrubber	Units	Fabric filter	Units
Design volume	DNM^3/min	Design volume	DNM^3/min
Design ΔP	cm WG	Design ΔP	cm WG
Design temperature	°C	Design temperature	°C
Design efficiency	%	Design efficiency	%
Design inlet grain loading	mg/m^3	Design inlet grain loading	mg/m^3
Total power consumption	kw	Total power consumption	kw
Inlet gas velocity	m/s	Design air/cloth ratio	m^3/m^2 min
Demister type	text	Number of compartments	number
Design liquid loading	ℓ/1,000 m^3	Bag composition	text
Entrainment separator type	text	Bag length	m

610* Parameter Type Typical	Descriptive word for parameter as appropriate for generic device type (410). Table A-5 is a tabulation of parameters which should be entered as a minimum. Additional parameter types may be included as required for more complete description of device operational characteristics. Note that some of the operating parameters and values are included later as data from the test run. Example: RAPPING FREQUENCY
620* Parameter Value Typical	The numerical value corresponding to the parameter type (610) entered only as metric units indicated in Table A-6 or as required for additional types. Example: TWICE PER MINUTE
700* Test Characteristics	A repeating group within the repeating group 300. This group defines the characteristics of each subseries and includes statements 710 through 930; statement 1700; lower level repeating group 1000. Data are not entered in this category but this category is used as an introduction to subcategories.
710* Subseries Number	Unique number assigned to the group of run numbers comprising this subseries. Example: 14
720* Subseries Test Date	Date of test in format month/day/year. Example: 05/15/75
730* Subseries Start Time	Start time of subseries based on 24 hr local standard time. Example: 1230 (Note: no colons)
740* Subseries Stop Time	Stop time of subseries based on 24 hr local standard time. Example: 1610 (Note: no colons)
750* Sampling Location	Location of sampling train for this run relative to the control device, either inlet or outlet. Example: DEVICE INLET

Table A-5. DEVICE OPERATING PARAMETER TYPE

ESP	**Units**	**Cyclone**	**Units**
Operating ΔP	cm WG	Operating ΔP	cm WG
Power consumption	kw	Measured efficiency	%
Bulk linear velocity	m/s	-	
Applied voltage	volts	-	
Gas pretreatment	text	Gas pretreatment	text
Rapping frequency	number/min	-	
Spark rate	number/min	-	
Current density	nanoamps/cm^2	-	
Liquid used	text	-	
Liquid loading	ℓ/min	-	
Scrubber	**Units**	**Fabric filter**	**Units**
Operating ΔP	cm WG	Operating ΔP	cm WG
Measured efficiency	%	Measured efficiency	%
Total power consumption	kw	Total power consumption	kw
-		Bag composition	text
Gas pretreatment	text	Gas pretreatment	text
Recycle ratio	number	Cleaning frequency	number/min
Liquor recycle characteristics	text	Air/cloth ratio	m^3/m^2 min
Effluent liquid treatment requirement	text	Cloth construction	text
Scrubbing liquor type	name	Cloth weight	gm/m^2
Liquor loading	ℓ/m^3	Cloth thickness	cm

Table A-6. LIST OF ANALYSIS CODES

	Analysis Method	Alphabetic code
1.	Atomic Absorption (flame or flameless)	A
2.	Chemiluminescence	B
3.	Conductametric Method (specify in Comments	C
4.	Colorimetric Method (specify in Comments)	D
5.	Electrometric Method (coulometry, potentiometry, etc.)	E
6.	Flame Ionization	F
7.	Gravimetric Method (specify in Comments)	G
8.	Infrared Absorption (IR)	I
9.	Nondispersive Infrared Absorption	J
10.	Gas Chromatography	K
11.	Thin-layer Chromatography	L
12.	Nuclear Magnetic Resonance (NMR)	M
13.	Neutron Activation Method	N
14.	Photometric Method (e.g., "flame;" specify in Comments)	P
15.	Beta Gauge (Carbon-12)	Q
16.	Mass Spectrographic Method (e.g., "Spark-source;" specify in Comments)	R
17.	Emission Spectrographic Method (e.g., muffle furnace; specify in Comments)	S
18.	Titrimetric (specify in Comments)	T
19.	Turbidimetric (e.g., pH meter; specify in Comments)	U
20.	"Wet Chemistry" Method (e.g., Jacobs Method; specify in Comments)	W
21.	Optical Evaluation Method (e.g., reflectance, transmittance; specify in Comments)	X
22.	Other (specify in Comments)	Z

760* Sampling Location Description	A brief description of the sample train location relative to significant flow disturbances. Example: TEN DUCT DIAMETERS DOWNSTREAM FROM 90 DEGREE BEND
770* Source Operating Mode	Brief description of source operation at time of run. Most sources will be steady-state, but for sources with cyclic operations or specific disturbances, this information is required. In the case of an arc furnace such description may include "oxygen-lancing," "charging," "pouring," etc. Example: OXYGEN-LANCING
780* Source Operating Rate	Operating rate of source per unit time in with dimensions of metric ton/hr, mw, etc. Example: 10 MT/hr
790* Source Feed Material	Specific type of fuel or feed material used during run. Example: PULVERIZED BITUMINOUS COAL
800* Feed Material Composition	Percentage data of feed material for appropriate constituents. Example: 4.1% S, 10.2% ash
810* Volumetric Flow Rate	Stack gas flow rate (from EPA Method 1) in units of DNM^3/min. Example: 1,200
820* Gas Velocity at Sampling Location	Velocity of gas stream at the sampling location for this run in units of meters per second. Example: 20.4
830* Gas Temperature at Sampling Location	Temperature of gas stream at the sampling location for this run in °C. Example: 61.4
840* Pressure at Sampling Location	Stack pressure at the sampling location for this run in cm water gauge. Example: 11.5

850* Moisture Content	Percent moisture by volume (from EPA Method 4). Example: 17.4
860* Percent Isokinetic Sampling	100 Times the ratio of the average velocity of the gas entering the sampling nozzle to velocity of the flue gas streams at the sampling point. Example: 98.7
870* Gas Composition	Percent of CO_2, O_2, CO, and N_2 by volume dry (from EPA Method 3). $\% CO_2 + \% O_2 + \% CO + \% N_2 = 100\%$ Example: CO_2 - 12, O_2 - 6, CO - 0.5, N_2 - 81.5
880* Trace Gases in PPM	Chemical symbol and measured concentrations for trace gases measured during test run in parts per million (ppm). Example: SO_2 - 300, NO_2 - 50, Cl - 200
890* Mass Train-Total Mass Concentration-Mantissa	The mantissa for the value of measured particulate concentration (EPA Method 5) in units of $\mu g/DNM^3$. Example: 4.25
900* Mass Train-Total Mass Concentration-Exponent	The exponent for the value in 890, including positive or negative sign. Example: + 03
910* Mass Train-Front Half Mass Concentration-Mantissa	The mantissa for the value of measured particulate concentration for the front half of the EPA Method 5 train (particulate filter and probe wash) in units of $\mu g/DNM^3$. Example: 1.24
920* Mass Train-Front Half Mass Concentration-Exponent	The exponent for the value in 910; including positive or negative sign. Example: + 02
930* Mass Train Comments	Any comments or data not elsewhere reported which are specifically related to the mass train data in 890 through 920. Example: Mass concentration unusually low due to unexplained train leakage between filter and meter.

1000* Run Group	A repeating group within the repeating group 700. This group defines the data and information for each run, and includes statements 1010 through 1070; 1300 through 1520; statement 1600; and lower level repeating groups 1100, 1200 and 1550. Data are not entered in this category but this category is used as an introduction to subcategories.
1010* Run Number	Unique number assigned to each run within the test series. Example: 02
1020* Density	The particle density, in units of grams per cubic centimeter. Example: 5.22
1030* Density Determination	An indication of whether the density value in 930 was determined experimentally or assumed. Example: MEASURED
1040* Resistivity - Mantissa	The physical-chemical property of the resistance of the particle based on particle volume with unit-cross-sectional area and unit length, in units of ohm-centimeter. Mantissa for the value. Example: 5.25
1050* Resistivity - Exponent	The exponent for the value in 1040, including positive or negative sign. Example: - 11
1060* Resistivity - Determination	An indication of whether the resistivity value in 950 and 960 was determined experimentally or assumed. Example: MEASURED
1070* Physical Properties - Comments	Additional text comments regarding elements 1020 through 1060, or data for other physical properties such as solubility measurements. Example: Solubility of particulate in water is 0.4 g/ml

1100* Bioassay Analysis	A repeating group within the repeating group 1000. This group defines the type of bioassay testing, if done, using the collected particulate, and includes statements 1110 and 1120. Data are not entered in this category but this category is used as an introduction to subcategories.
1110* Bioassay Test Type	Indication of biological testing, if done, with the collected particulate. Entries will be only from the following: Cytotoxicity - animal Cytotoxicity - human Mutagenicity - (Bacterial strain(s)) Inhalation Skin painting Neonatal - mouse
1120* Bioassay Test Remarks	Results of the indicated tests in 1010. Example: SKIN PAINTING INDICATED NO CHANGE DUE TO PARTICULATE USED
1200* Chemical Analysis	A repeating group within the repeating group 1000. This group includes any chemical analyses that were performed on the sample. The group includes statements 1210 through 1280. Data are not entered in this category but the category is used as an introduction to subcategories.
1210* SAROAD Chemical ID	The identification number from the SAROAD System of the specific chemical(s) for which analysis was performed. (See Appendix C.) Example: 2322 (for ammonium sulfate)
1200* Analysis Method	The identification letter of the specific analysis method used. (See Table A-6.) Example: B (for chemiluminescence)
1230* Filter/Total Concentration	The total concentration of the chemical listed in 1210 as measured by the filter or the sum of the discrete size distributions in 1240 through 1280 in units of $\mu g/DNM^3$. Example: 0047.3156

1240* Concentration Above 10	Concentration of the chemical in 1210 with particle diameter greater than 10 μm, in units of μg/DNM^3. Example: 0.711
1250* Concentration 10-1	Concentration of the chemical in 1210 with particle diameters in the range from 10 μm to 1 μm in units of μg/DNM^3. Example: 17.50
1260* Concentration 1-0.1	Concentration of the chemical in 1210 with particle diameters in the range from 1 μm to 0.1 μm in units of μg/DNM^3. Example: 2.37
1270* Concentration 0.1-0.01	Concentration of the chemical in 1210 with particle diameters in the range from 0.1 μm to 0.01 μm in units of μg/DNM^3. Example: 4.93
1280* Concentration Below 0.01	Concentration of the chemical in 1210 with particle diameter less than 0.01 μm, in units of μg/DNM^3. Example: 0.57
1300* Measurement Equipment Type	Particle size measuring equipment (including model type, if applicable). Only standard nomenclature will be used from Table A-7. Example: ANDERSEN MARK III IMPACTOR
1310* Size Range Lower Limit	Lower limit of the size range for the equipment/method specified in 1300 in units of micrometers (μm). Example: 0.40
1320* Size Range Upper Limit	Upper limit of the size range for the equipment specified in 1300 in units of micrometers (μm). Example: 10.00
1330* Substrate	The substrate acting as the collection medium. Example: GLASS FIBER FILTER
1340* Sampling Start Time	Start time of run based on 24 hr local standard time. Example: 1345 (Note: no colons)

TABLE A-7. STANDARD NOMENCLATURE FOR MEASUREMENT EQUIPMENT

Generic Class	Type	Description
Impactor	BRINKS BMS-11 IMPACTOR	Conventional Brinks sampler with a precyclone having a 7 μm cut size
	ANDERSEN MODEL II IMPACTOR	Andersen stack sampler with stainless steel collection plates
	ANDERSEN MODEL III IMPACTOR	Modified Andersen sampler with glass fiber filter collection surface
	ANDERSEN MODEL IV IMPACTOR	Modified Andersen sampler with glass fiber filter collection surfaces and a cyclone precollector
	UW MARK III IMPACTOR	University of Washington cascade impactor manufactured by Pollution Control Systems, Inc.
	TAG IMPACTOR	Multiple slit cascade impactor manufactured by Environmental Research Corporation or Sierra Instruments, Inc.
	OTHER IMPACTOR	Any other impactor, including modified versions of the above
Optical particle counter	ROYCO MODEL - OPC	Manufactured by Royco Instruments, Inc., Menlo Park, California
	CLIMET MODEL - OPC	Manufactured by Climet Instruments, Inc., Sunnyvale, California
	BAUSCH & LOMB MODEL 40-1 - OPC	Manufactured by Bausch & Lomb, Rochester, New York
	OTHER - OPC	As necessary

TABLE A-7. (Concluded)

Generic Class	Type	Description
Condensation nuclei counter	GENERAL ELECTRIC - CNC	Manufactured by General Electric, Pittsfield, Massachusetts
	RICH 100 - CNC	
	OTHER - CNC	
Diffusion battery	CLUSTER TUBE - DIFF BATTERY	
	RECTANGULAR TUBE - DIFF BATTERY	
	CHS - DIFF BATTERY	of David Sinclair design with collimated hole structure
	WIRE SCREEN DIFF BATTERY	Manufactured by Thermo-Systems, Inc.
Electrical analyzer	WHITBY ELECTRICAL ANALYZER, MODEL 3030	Manufactured by Thermo-Systems, Inc.
Miscellaneous	MOBILITY ANALYZER	
	CYCLONES	
	COULTER COUNTER	
	ELECTRON MICROSCOPE	
	OPTICAL MICROSCOPE	
Other		Measuring equipment not otherwise classified

1350* Sampling Duration	The length of time for the measurement in minutes. Example: 45
1360* Sampling Flow Rate	Sampling flow rate for this run in m^3/min or liters/min. Example: 4.5 liters/min
1400* Dilution Factor	Dilution factor used for sampling methods which require dilution (i.e., diffusion battery). Example: 1.0 (no dilution) 65
1410* Sampling Train Temperature	Temperature maintained at the sampling train for the duration of the run in °C. Example: 42.2
1420* Pressure at Sample Train Location	The absolute pressure of the gas at the inlet to the sample train in units of mm Hg. Example: 750
1430* Percent Moisture	The percent water vapor by volume in the gas sampled by the instrument. Example: 72.5
1500* Particle Diameter Basis	Indication of the type of diameter specific for this measurement - Aerodynamic or Stokes. Example: AERODYNAMIC
1510* Concentration Basis	Indication of the type of measurement/calculations used in obtaining concentration for this measurement - mass or number. Example: MASS
1520* Upper Diameter Boundary	The upper diameter boundary point in units of micrometers (m) for the specific basis in 1500. Example: 20.00

1550* Particle Size Distribution Data	A repeating group within the repeating group 1000. This group defines the particle size distribution and includes statements 1560, 1570 and 1580. Data are not entered in this category but this category is used as an introduction to subcategories.
1560* Diameter Boundary	The class interval boundary point (particle diameter) for the specific basis in 1400. Units are micrometers (μm). Example: 13.770
1570* Concentration Value - Mantissa	The mantissa of the concentration value for the measurement with the basis as noted in 1410 in units of $\mu g/DNM^3$. Example: 2.98
1580* Concentration Value - Exponent	The exponent for the concentration value in 1570 including positive or negative sign. Example: + 06
1600* Test Run Remarks	Any comments or data not elsewhere reported, which are specifically related to the run number designated in statement 1010.
1700* Subseries Remarks	Any comments or data not elsewhere reported, which are specifically related to the subseries designated in statement 310. In addition, operating parameter types and values (see 610, 620) for the second and subsequent test runs in the subseries designated in 310 will be entered here.
1800* Test Series Remarks	Any comments or data not elsewhere reported, which are specifically related to the test series designated in statement 310.
	To be included in these remarks, specifically are such physical, and/or chemical properties which may have been measured as corrosiveness or solubility which are not included in 1070.
	Statements 1600, 1700 and 1800 may also be used to indicate a subjective judgment of the value of the data, measurement technique, etc., which may have a bearing on the general usefulness of a given test run, subseries or test series and the reliability of the data.

APPENDIX B

SOURCE CLASSIFICATION CODES

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NATIONAL EMISSIONS DATA SYSTEM (NEDS)
SOURCE CLASSIFICATION CODE (SCC) REPORT

```
                          SCC CATEGORY NAMES
                          ******************
        I                II                III              IV                  UNITS

EXTCOMB BOILER   IELECTRIC GENERATNIANTHRACITE COAL  I>100MMBTU PULVIZDITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIANTHRACITE COAL  I>100MMBTU STOKERSITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIANTHRACITE COAL  I10-100MMBTU PULVDITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIANTHRACITE COAL  I10-100MMBTU STOKRITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIANTHRACITE COAL  I<10MMBTU PULVIZEDITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIANTHRACITE COAL  I<10MMBTU STOKER  ITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIANTHRACITE COAL  IOTHER/NOT CLASIFDITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBITUMINOUS COAL  I>100MMBTU PULVWETITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBITUMINOUS COAL  I>100MMBTU PULVDRYITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBITUMINOUS COAL  I>100MMBTU CYCLONEITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBITUMINOUS COAL  I>100MMBTU SPDSTKRITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBITUMINOUS COAL  I>100MMBTU/HR UFSKITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBITUMINOUS COAL  I10-100MMBTU PULWTITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBITUMINOUS COAL  I10-100MMBTU PULDYITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBITUMINOUS COAL  I10-100MMBTU OFSTKITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBITUMINOUS COAL  I10-100MMBTU UFSTKITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBITUMINOUS COAL  I<10MMBTU OFSTOKERITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBITUMINOUS COAL  I<10MMBTU UFSTOKERITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBITUMINOUS COAL  I<10MMBTU PULV-DRYITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBITUMINOUS COAL  IOTHER/NOT CLASIFDITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I>100MMBTU PULVWETITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I>100MMBTU PULVDRYITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I>100MMBTU CYCLONEITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I>100MMBTU OF STKRITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I>100MMBTU UF STKRITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I>100MMBTU SPDSTKRITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I10-100MMBTU DYPULITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I10-100MMBTU WTPULITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I10-100MMBTU OFSTKITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I10-100MMBTU UFSTKITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I10-100MMBTUSPDSTKITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I<10MMBTU PULV DRYITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I<10MMBTU OF STOKRITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I<10MMBTU UF STOKRITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNILIGNITE          I<10MMBTU SPDSTOKRITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIRESIDUAL OIL     I>100MMBTU/HR GENLI1000GALLONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIRESIDUAL OIL     I10-100MMBTU/HRGNLI1000GALLONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIRESIDUAL OIL     I<10MMBTU/HR GENL I1000GALLONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIDISTILLATE OIL   I>100MMBTU/HR GENLI1000GALLONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIDISTILLATE OIL   I10-100MMBTU/HRGNLI1000GALLONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIDISTILLATE OIL   I<10MMBTU/HR GENL I1000GALLONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNINATURAL GAS      I>100MMBTU/HR     IMILLION CUBIC FEET BURNED
EXTCOMB BOILER   IELECTRIC GENERATNINATURAL GAS      I10-100MMBTU/HR   IMILLION CUBIC FEET BURNED
EXTCOMB BOILER   IELECTRIC GENERATNINATURAL GAS      I<10MMBTU/HR      IMILLION CUBIC FEET BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIPROCESS GAS      I>100MMBTU/HR     IMILLION CUBIC FEET BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIPROCESS GAS      I10-100MMBTU/HR   IMILLION CUBIC FEET BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIPROCESS GAS      I<<10MMBTU/HR     IMILLION CUBIC FEET BURNED
EXTCOMB BOILER   IELECTRIC GENERATNICOKE             I>100MMBTU/HR     ITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBAGASSE          I10-100MMBTU/HR   ITONS BURNED
EXTCOMB BOILER   IELECTRIC GENERATNIBAGASSE          I<10MMBTU/HR      ITONS BURNED
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NATIONAL EMISSIONS DATA SYSTEM (NEDS)
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                          SCC CATEGORY NAMES
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       I                   II               III                   IV                UNITS

EXTCOMB BOILER   |ELECTRIC GENERATN|SOLID WASTE/COAL |>100MMBTU/HR     |TONS BURNED
EXTCOMB BOILER   |ELECTRIC GENERATN|SOLID WASTE/COAL |10-100MMBTU/HR   |TONS BURNED
EXTCOMB BOILER   |ELECTRIC GENERATN|SOLID WASTE/COAL |<10MMBTU/HR      |TONS BURNED
EXTCOMB BOILER   |ELECTRIC GENERATN|OTHER/NOT CLASIFD|SPECIFY IN REMARK|MILLION CUBIC FEET BURNED
EXTCOMB BOILER   |ELECTRIC GENERATN|OTHER/NOT CLASIFD|SPECIFY IN REMARK|1000 GALLON (LIQUID) BURNED
EXTCOMB BOILER   |ELECTRIC GENERATN|OTHER NOT CLASIFD|SPECIFY IN REMARK|TONS BURNED (SOLID)
EXTCOMB BOILER   |INDUSTRIAL       |ANTHRACITE COAL  |>100MMBTU/HR PULV|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |ANTHRACITE COAL  |>100MMBTU/HR STKR|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |ANTHRACITE COAL  |10-100MMBTU PULVD|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |ANTHRACITE COAL  |10-100MMBTU STKR |TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |ANTHRACITE COAL  |<10MMBTU/HR PULVD|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |ANTHRACITE COAL  |<10MMBTU/HR STKR |TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |ANTHRACITE COAL  |<10MMBTU/HR HNDFR|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |ANTHRACITE COAL  |OTHER/NOT CLASIFD|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |>100MMBTU PULVWET|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |>100MMBTU PULVDRY|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |>100MMBTU CYCLONE|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |>100MMBTU SPDSTKR|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |10-100MMBTU OFSTK|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |10-100MMBTU UFSTK|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |10-100MMBTU PULWT|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |10-100MMBTU PULDY|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |10-100MMBTUSPDSTK|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |<10MMBTU OFD STKR|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |<10MMBTU UFD STKR|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |<10MMBTU PULV DRY|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |<10MMBTU SPD STKR|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |<10MMBTU HANDFIRE|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |BITUMINOUS COAL  |OTHER/NOT CLASIFD|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |>100MMBTU PULVWET|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |>100MMBTU PULVDRY|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |>100MMBTU CYCLONE|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |>100MMBTU OFSTKR |TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |>100MMBTU UFSTKR |TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |>100MMBTU SPDSTKR|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |10-100MMBTU DYPUL|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |10-100MMBTU WTPUL|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |10-100MMBTU OFSTK|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |10-100MMBTU UFSTK|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |10-100MMBTUSPDSTK|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |<10MMBTU PULV DRY|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |<10MMBTU OFSTOKR |TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |<10MMBTU UFSTOKR |TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |<10MMBTU HANDFIRE|TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |LIGNITE          |<10MMBTU SPDSTKR |TONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |RESIDUAL OIL     |>100MMBTU/HR     |1000 GALLONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |RESIDUAL OIL     |10-100MMBTU/HR   |1000 GALLONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |RESIDUAL OIL     |<10MMBTU/HR      |1000 GALLONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |DISTILLATE OIL   |>100MMBTU/HR     |1000 GALLONS BURNED
EXTCOMB BOILER   |INDUSTRIAL       |DISTILLATE OIL   |10-100MMBTU/HR   |1000 GALLONS BURNED
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                             SCC CATEGORY NAMES
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      I                II                III                IV                 UNITS

EXTCOMB BOILER   IINDUSTRIAL       IDISTILLATE OIL   I<10MMBTU/HR      I1000 GALLONS BURNED
EXTCOMB BOILER   IINDUSTRIAL       INATURAL GAS      I>100MMBTU/HR     IMILLION CUBIC FEET BURNED
EXTCOMB BOILER   IINDUSTRIAL       INATURAL GAS      I10-100MMBTU/HR   IMILLION CUBIC FEET BURNED
EXTCOMB BOILER   IINDUSTRIAL       INATURAL GAS      I<10MMBTU/HR      IMILLION CUBIC FEET BURNED
EXTCOMB BOILER   IINDUSTRIAL       IPROCESS GAS      I>100MMBTU/HR     IMILLION CUBIC FEET BURNED
EXTCOMB BOILER   IINDUSTRIAL       IPROCESS GAS      I10-100MMBTU/HR   IMILLION CUBIC FEET BURNED
EXTCOMB BOILER   IINDUSTRIAL       IPROCESS GAS      I<10MMBTU/HR      IMILLION CUBIC FEET BURNED
EXTCOMB BOILER   IINDUSTRIAL       ICOKE             I10-100MMBTU/HR   ITONS BURNED
EXTCOMB BOILER   IINDUSTRIAL       ICOKE             I<10MMBTU/HR      ITONS BURNED
EXTCOMB BOILER   IINDUSTRIAL       IWOOD             IWOOD WASTE BOILERITONS BURNED
EXTCOMB BOILER   IINDUSTRIAL       IWOOD             ISMALL HANDFIRE   ITONS BURNED
EXTCOMB BOILER   IINDUSTRIAL       ILIQ PETROLEUM GASI10-100MMBTU/HR   I1000GALLONS BURNED
EXTCOMB BOILER   IINDUSTRIAL       ILIQ PETROLEUM GASI<10MMBTU/HR      I1000GALLONS BURNED
EXTCOMB BOILER   IINDUSTRIAL       IBAGASSE          I10-100MMBTU/HR   ITONS BURNED
EXTCOMB BOILER   IINDUSTRIAL       IBAGASSE          I<10MMBTU/HR      ITONS BURNED
EXTCOMB BOILER   IINDUSTRIAL       IOTHER/NOT CLASIFDISPECIFY IN REMARKIMILLION CUBIC FEET BURNED
EXTCOMB BOILER   IINDUSTRIAL       IOTHER/NOT CLASIFDISPECIFY IN REMARKI1000 GALLON BURNED (LIQUID)
EXTCOMB BOILER   IINDUSTRIAL       IOTHER NOT CLASIFDISPECIFY IN REMARKITONS BURNED (SOLID)
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIANTHRACITE COAL  I10-100MMBTU PULWTITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIANTHRACITE COAL  I10-100MMBTU PULDYITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIANTHRACITE COAL  I10-100MMBTUSPDSTKITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIANTHRACITE COAL  I<10MMBTU PULVIZEDITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIANTHRACITE COAL  I<10MMBTU STOKER  ITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIANTHRACITE COAL  I<10MMBTU SPDSTOKRITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIANTHRACITE COAL  IOTHER/NOT CLASIFDITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIBITUMINOUS COAL  I10-100MMBTU PULWTITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIBITUMINOUS COAL  I10-100MMBTU PULDYITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIBITUMINOUS COAL  I10-100MMBTU OFSTKITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIBITUMINOUS COAL  I10-100MMBTU UFSTKITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIBITUMINOUS COAL  I10-100MMBTUSPDSTKITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIBITUMINOUS COAL  I10-100MMBTU HANFRITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIBITUMINOUS COAL  I<10MMBTU OFSTOKERITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIBITUMINOUS COAL  I<10MMBTU UFSTOKERITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIBITUMINOUS COAL  I<10MMBTU SPDSTOKRITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIBITUMINOUS COAL  I<10MMBTU HANDFIREITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIBITUMINOUS COAL  IOTHER/NOT CLASIFDITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLILIGNITE          I10-100MMBTU PULWTITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLILIGNITE          I10-100MMBTU PULDYITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLILIGNITE          I10-100MMBTU OFSTKITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLILIGNITE          I10-100MMBTU UFSTKITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLILIGNITE          I10-100MMBTUSPDSTKITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLILIGNITE          I<10MMBTU PULV-DRYITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLILIGNITE          I<10MMBTU OFSTOKERITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLILIGNITE          I<10MMBTU UFSTOKERITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLILIGNITE          I<10MMBTU SPDSTOKRITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLILIGNITE          I<10MMBTU HANDFIREITONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIRESIDUAL OIL     I>100MMBTU/HR     I1000 GALLONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIRESIDUAL OIL     I10-100MMBTU/HR   I1000 GALLONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIRESIDUAL OIL     I<10MMBTU/HR      I1000 GALLONS BURNED
EXTCOMB BOILER   ICOMMERCL-INSTUTNLIDISTILLATE       I>100MMBTU/HR     I1000 GALLONS BURNED
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                          SCC CATEGORY NAMES
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     I                 II                III                 IV                  UNITS

EXTCOMB BOILER   |COMMERCL-INSTUTNL|DISTILLATE       |10-100MMBTU/HR   |1000 GALLONS BURNED
EXTCOMB BOILER   |COMMERCL-INSTUTNL|DISTILLATE       |<10MMBTU/HR      |1000 GALLONS BURNED
EXTCOMB BOILER   |COMMERCL-INSTUTNL|NATURAL GAS      |>100MMBTU/HR     |MILLION CUBIC FEET BURNED
EXTCOMB BOILER   |COMMERCL-INSTUTNL|NATURAL GAS      |10-100MMBTU/HR   |MILLION CUBIC FEET BURNED
EXTCOMB BOILER   |COMMERCL-INSTUTNL|NATURAL GAS      |<10MMBTU/HR      |MILLION CUBIC FEET BURNED
EXTCOMB BOILER   |COMMERCL-INSTUTNL|WOOD             |<10MMBTU/HR      |TONS BURNED
EXTCOMB BOILER   |COMMERCL-INSTUTNL|LIQ PETROLEUM GAS|10-100MMBTU/HR   |1000 GALLONS BURNED
EXTCOMB BOILER   |COMMERCL-INSTUTNL|LIQ PETROLEUM GAS|<10MMBTU/HR      |1000 GALLONS BURNED
EXTCOMB BOILER   |COMMERCL-INSTUTNL|OTHER/NOT CLASIFD|SPECIFY IN REMARK|MILLION CUBIC FEET BURNED
EXTCOMB BOILER   |COMMERCL-INSTUTNL|OTHER/NOT CLASIFD|SPECIFY IN REMARK|1000 GALLON BURNED (LIQUID)
EXTCOMB BOILER   |COMMERCL-INSTUTNL|OTHER/NOT CLASIFD|SPECIFY IN REMARK|TONS BURNED (SOLID)
INTERNLCOMBUSTION|ELECTRIC GENERATN|DISTILLATE OIL   |TURBINE          |1000 GALLONS BURNED
INTERNLCOMBUSTION|ELECTRIC GENERATN|NATURAL GAS      |TURBINE          |MILLION CUBIC FEET
INTERNLCOMBUSTION|ELECTRIC GENERATN|DIESEL           |RECIPROCATING    |THOUSANDS OF GALLONS
INTERNLCOMBUSTION|ELECTRIC GENERATN|OTHER/NOT CLASIFD|SPECIFY IN REMARK|MILLION CUBIC FEET BURNED
INTERNLCOMBUSTION|ELECTRIC GENERATN|OTHER/NOT CLASIFD|SPECIFY IN REMARK|1000 GALLONS BURNED
INTERNLCOMBUSTION|INDUSTRIAL       |DISTILLATE OIL   |TURBINE          |1000 GALLONS BURNED
INTERNLCOMBUSTION|INDUSTRIAL       |DISTILLATE OIL   |RECIPROCATING    |1000 GALLONS BURNED
INTERNLCOMBUSTION|INDUSTRIAL       |NATURAL GAS      |TURBINE          |MILLION CUBIC FEET
INTERNLCOMBUSTION|INDUSTRIAL       |NATURAL GAS      |RECIPROCATING    |MILLION CUBIC FEET
INTERNLCOMBUSTION|INDUSTRIAL       |GASOLINE         |RECIPROCATING    |1000 GALLONS BURNED
INTERNLCOMBUSTION|INDUSTRIAL       |DIESEL FUEL      |RECIPROCATING    |1000 GALLONS BURNED
INTERNLCOMBUSTION|INDUSTRIAL       |OTHER/NOT CLASIFD|SPECIFY IN REMARK|MILLION CUBIC FEET BURNED
INTERNLCOMBUSTION|INDUSTRIAL       |OTHER/NOT CLASIFD|SPECIFY IN REMARK|1000 GALLONS BURNED
INTERNLCOMBUSTION|COMMERCL-INSTUTNL|DIESEL           |RECIPROCATING    |THOUSANDS OF GALLONS
INTERNLCOMBUSTION|COMMERCL-INSTUTNL|OTHER/NOT CLASIFD|SPECIFY IN REMARK|MILLION CUBIC FEET BURNED
INTERNLCOMBUSTION|COMMERCL-INSTUTNL|OTHER/NOT CLASIFD|SPECIFY IN REMARK|1000 GALLONS BURNED
INTERNLCOMBUSTION|ENGINE TESTING   |AIRCRAFT         |TURBOJET         |THOUSANDS OF GALLON/FUEL
INDUSTRIAL PROCES|CHEMICAL MFG     |ADIPIC ACID PROD |GENERAL-CYCLOHEX |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |ADIPIC ACID PROD |OTHER/NOT CLASIFD|TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |AMMONIA W/METHNTR|PURGE GAS        |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |AMMONIA W/METHNTR|STORAGE/LOADING  |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |AMMONIA W/COABSRB|REGENERATOR EXIT |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |AMMONIA W/COABSRB|PURGE GAS        |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |AMMONIA W/COABSRB|STORAGE/LOADING  |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |AMMONIA          |OTHER/NOT CLASIFD|TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |AMMONIUM NITRATE |GENERAL          |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |AMMONIUM NITRATE |OTHER/NOT CLASIFD|TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |CARBON BLACK     |CHANNEL PROCESS  |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |CARBON BLACK     |THERMAL PROCESS  |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |CARBON BLACK     |FURNACE PROC GAS |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |CARBON BLACK     |FURNACE PROC OIL |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |CARBON BLACK     |FURNACE W/GAS/OIL|TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |CARBON BLACK     |OTHER/NOT CLASFD |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |CHARCOAL MFG     |PYROL/DISTIL/GENL|TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |CHARCOAL MFG     |OTHER/NOT CLASFD |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |CHLORINE         |GENERAL          |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |CHLORINE         |OTHER/NOT CLASIFD|TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |CHLOR-ALKALI     |LIQUIFTN-DIAPHRGM|100 TONS CHLORINE LIQUEFIED
INDUSTRIAL PROCES|CHEMICAL MFG     |CHLOR-ALKALI     |LIQUIFTN-MERC CEL|100 TONS CHLORINE LIQUEFIED
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SCC CATEGORY NAMES

I	II	III	IV	UNITS
INDUSTRIAL PROCES	CHEMICAL MFG	CHLOR-ALKALI	LOADING TNKCARVNT	100 TONS CHLORINE LIQUEFIED
INDUSTRIAL PROCES	CHEMICAL MFG	CHLOR-ALKALI	LOADING STGTNKVNT	100 TONS CHLORINE LIQUEFIED
INDUSTRIAL PROCES	CHEMICAL MFG	CHLOR-ALKALI	AIR-BLOW MC BRINE	100 TONS CHLORINE LIQUEFIED
INDUSTRIAL PROCES	CHEMICAL MFG	CHLOR-ALKALI	OTHER/NOT CLASIFD	100 TONS CHLORINE LIQUEFIED
INDUSTRIAL PROCES	CHEMICAL MFG	CLEANING CHEMICLS	SOAP/DET SPRYDRYR	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	CLEANING CHEMICLS	SPECIALTY CLEANRS	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	CLEANING CHEMICLS	OTHERS/NOT CLASFD	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	EXPLOSIVES-TNT	NITRATION REACTRS	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	EXPLOSIVES-TNT	HNO3 CONCTRTRS	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	EXPLOSIVES-TNT	H2SO4 REGENERATR	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	EXPLOSIVES-TNT	RED WATER INCIN	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	EXPLOSIVES-TNT	OPEN WASTE BURN	TONS BURNED
INDUSTRIAL PROCES	CHEMICAL MFG	EXPLOSIVES	OTHER/NOT CLASIFD	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	HYDROCHLORIC ACID	BYPRODUCTW/OSCRUB	TONS FINAL ACID
INDUSTRIAL PROCES	CHEMICAL MFG	HYDROCHLORIC ACID	BYPRODUCT W/SCRUB	TONS FINAL ACID
INDUSTRIAL PROCES	CHEMICAL MFG	HYDROCHLORIC ACID	OTHER/NOT CLASIFD	TONS FINAL ACID
INDUSTRIAL PROCES	CHEMICAL MFG	HYDROFLUORIC ACID	ROTRYKILNW/SCRUBR	TONS ACID
INDUSTRIAL PROCES	CHEMICAL MFG	HYDROFLUORIC ACID	ROTRYKILNW/OSCRUB	TONS ACID
INDUSTRIAL PROCES	CHEMICAL MFG	HYDROFLUORIC ACID	GRIND/DRY FLUOSPR	TONS FLUORSPAR
INDUSTRIAL PROCES	CHEMICAL MFG	HYDROFLUORIC ACID	OTHER/NOT CLASIFD	TONS ACID
INDUSTRIAL PROCES	CHEMICAL MFG	NITRIC ACID	AMMONIAOXIDATNOLD	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	NITRIC ACID	AMMONIAOXIDATNNEW	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	NITRIC ACID	NITACD CONCTR OLD	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	NITRIC ACID	NITACD CONCTR NEW	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	NITRIC ACID-WEAK	UNCONTROLLED	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	NITRIC ACID-WEAK	W/CATYL/COMBUSTER	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	NITRIC ACID-STRNG	UNCONTROLLED	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	NITRIC ACID-STRNG	W/ABSORBERS	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	NITRIC ACID	OTHER/NOT CLASIFD	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	PAINT MFG	GENERAL	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	PAINT MFG	PIGMENT KILN	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	PAINT MFG	OTHER/NOT CLASFD	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	VARNISH MFG	BODYING OIL GENL	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	VARNISH MFG	OLEORESINOUS GENL	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	VARNISH MFG	ALKYD GENERAL	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	VARNISH MFG	ACRYLIC GENERAL	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	VARNISH MFG	OTHER/NOT CLASFD	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	PHOS-ACID WETPROC	REACTOR-UNCONTLD	TONS PHOSPHATE ROCK
INDUSTRIAL PROCES	CHEMICAL MFG	PHOS-ACID WETPROC	GYPSUM POND	TONS PHOSPHATE ROCK
INDUSTRIAL PROCES	CHEMICAL MFG	PHOS-ACID WETPROC	CONDENSR-UNCONTLD	TONS PHOSPHATE ROCK
INDUSTRIAL PROCES	CHEMICAL MFG	PHOS-ACID WETPROC	OTHER/NOT CLASFD	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	PHOS-ACID THERMAL	GENERAL	TONS PHOSPHOROUS BURNED
INDUSTRIAL PROCES	CHEMICAL MFG	PHOS-ACID THERMAL	OTHER/NOT CLASFD	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	PLASTICS	PVC-GENERAL	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	PLASTICS	POLYPROD-GENERAL	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	PLASTICS	BAKELITE-GENERAL	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	PLASTICS	OTHER/NOT CLASFD	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	PHTHALIC ANHYDRID	UNCONTROLLED-GENL	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	PRINTING INK	COOKING-GENERAL	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	PRINTING INK	COOKING-OILS	TONS PRODUCED

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INDUSTRIAL PROCES	CHEMICAL MFG	PRINTING INK	COOKING-OLEORESIN	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	PRINTING INK	COOKING-ALKYDS	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	PRINTING INK	PIGMENT MIXINGGEN	TONS PIGMENT
INDUSTRIAL PROCES	CHEMICAL MFG	PRINTING INK	OTHER/NOT CLASFD	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	SODIUM CARBONATE	AMMONIA RECOVERY	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	SODIUM CARBONATE	HANDLING	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	SODIUM CARBONATE	OTHER/NOT CLASFD	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	H2SO4 -CHAMBER	GENERAL	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	H2SO4-CONTACT	99.7 CONVERSION	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	H2SO4-CONTACT	99.5 CONVERSION	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	H2SO4-CONTACT	99.3 CONVERSION	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	H2SO4-CONTACT	99.0 CONVERSION	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	H2SO4-CONTACT	97.0 CONVERSION	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	H2SO4-CONTACT	96.0 CONVERSION	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	H2SO4-CONTACT	95.0 CONVERSION	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	H2SO4-CONTACT	94.0 CONVERSION	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	H2SO4-CONTACT	93.0 CONVERSION	TONS PURE ACID PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	H2SO4-CONTACT	OTHER/NOT CLASFD	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC FIBERS	NYLON GENERAL	TONS FIBER
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC FIBERS	DACRON GENERAL	TONS FIBER
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC FIBERS	ORLON	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC FIBERS	ELASTIC	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC FIBERS	TEFLON	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC FIBERS	POLYESTER	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC FIBERS	NOMEX	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC FIBERS	ACRYLIC	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC FIBERS	TYVEK	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC FIBERS	OLEFINS	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC FIBERS	OTHERS/NOT CLASFD	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	SEMISYNTHTICFIBR	RAYON GENERAL	TONS FIBER
INDUSTRIAL PROCES	CHEMICAL MFG	SEMISYNTHTICFIBR	ACETATE	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	SEMISYNTHETICFIBR	VISCOSE	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	SEMISYNTHTICFIBR	OTHERS/NOT CLASFD	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC RUBBER	BUTADIENE-GENERAL	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC RUBBER	METHYLPROPENE-GNL	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC RUBBER	BUTYNE GENERAL	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC RUBBER	PENTADIENE-GENRL	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC RUBBER	DIMETHHEPTNE GENL	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC RUBBER	PENTANE-GENERAL	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC RUBBER	ETHANENITRILE-GEN	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC RUBBER	ACRYLONITRILE-GEN	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC RUBBER	ACROLEIN-GENERAL	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC RUBBER	AUTO TIRES GENERL	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	SYNTHETIC RUBBER	OTHER/NOT CLASFD	TONS PRODUCT
INDUSTRIAL PROCES	CHEMICAL MFG	FERTILIZ AMONNITR	PRILTWR-NEUTRLIZR	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	FERTILIZ AMONNITR	PRILLING TOWER	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	FERTILIZ AMONNITR	PRILTWR-DRYCOOLRS	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	FERTILIZ AMONNITR	GRANULAT-NEUTLIZR	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	FERTILIZ AMONNITR	GRANULATOR	TONS PRODUCED
INDUSTRIAL PROCES	CHEMICAL MFG	FERTILIZ AMONNITR	GRANULAT-DRYCOOLR	TONS PRODUCED

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INDUSTRIAL PROCES|CHEMICAL MFG     |FERTILIZ-NSUPPHOS|GRIND-DRY        |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |FERTILIZ-NSUPPHOS|MAIN STACK       |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |FERTILIZ-TRPSPHOS|RUN OF PILE      |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |FERTILIZ-TRPSPHOS|GRANULAR         |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |FERTILIZ-DIAMPHOS|DRYER-COOLERS    |TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |FERTILIZ-DIAMPHOS|AMONIAT-GRANULATE|TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |FERTILIZER       |OTHER/NOT CLASIFD|TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |TEREPTHALIC ACID |HNO3+PARAXYLENGEN|TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |TEREPTHALIC ACID |OTHER/NOT CLASIFD|TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |SULFUR(ELEMENTAL)|MOD-CLAUS 2STAGE |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |SULFUR(ELEMENTAL)|MOD-CLAUS 3STAGE |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |SULFUR(ELEMENTAL)|MOD-CLAUS 4STAGE |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |SULFUR(ELEMENTAL)|OTHER/NOT CLASIFD|TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |PESTICIDES       |MALATHION        |GALLONS OF PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |PESTICIDES       |OTHER/NOT CLASIFD|TONS PRODUCED
INDUSTRIAL PROCES|CHEMICAL MFG     |AMINES/AMIDES    |GENERAL/OTHER    |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |PIGMENT-INORGAN  |CALCINATION      |TONS OF PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |PIGMENT-INORGAN  |OTHER/NOT CLASIFD|TONS OF PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |SODIUM SULFATE   |GENERAL/OTHER    |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |SODIUM SULFATE   |KILNS            |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |SODIUM SULFITE   |GENERAL/OTHER    |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |SODIUM SULFITE   |KILNS            |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |SODIUM BICARB    |GENERAL          |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |LITHIUM HYDROXIDE|GENERAL          |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |FERTILIZER UREA  |GENERAL          |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |ADHESIVES        |GENL/COMPND UNKWN|TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |ACETATE FLAKE    |OTHER/NOT CLASFD |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |ACETONE          |OTHER/NOT CLASFD |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |MALEIC ANHYDRIDE |GENERAL/OTHER    |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |POLVINL PYRILIDON|GENERAL/OTHER    |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |SULFONIC ACID/ATS|GENERAL/OTHER    |TONS PRODUCT
INDUSTRIAL PROCES|CHEMICAL MFG     |WASTE GAS FLARES |OTHER/NOT CLASIFD|MILLION CUBIC FEET BURNED
INDUSTRIAL PROCES|CHEMICAL MFG     |OTHER/NOT CLASIFD|SPECIFY IN REMARK|TONS PRODUCT
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|ALFALFA DEHYDRATN|GENERAL          |TONS MEAL PRODUCED
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|ALFALFA DEHYDRATN|OTHER/NOT CLASFD |TONS PRODUCT
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|COFFEE ROASTING  |DIRECTFIRE ROASTR|TONS GREEN BEANS
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|COFFEE ROASTING  |INDIRCTFIREROASTR|TONS GREEN BEANS
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|COFFEE ROASTING  |STONER/COOLER    |TONS GREEN BEANS
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|COFFEE ROASTING  |OTHER/NOT CLASFD |TONS PRODUCT
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|COFFEE-INSTANT   |SPRAY DRIER      |TONS GREEN BEANS
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|COTTON GINNING   |UNLOADING FAN    |BALES COTTON
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|COTTON GINNING   |CLEANER          |BALES COTTON
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|COTTON GINNING   |STICK/BURR MACHNE|BALES COTTON
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|COTTON GINNING   |OTHER/NOT CLASFD |BALES COTTON
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|FEED/GRAIN TERMEL|SHIPING/RECEIVING|TONS GRAIN PROCESSED
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|FEED/GRAIN TERMEL|TRANSFER/CONVEYNG|TONS GRAIN PROCESSED
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|FEED/GRAIN TERMEL|SCREENING/CLEANNG|TONS GRAIN PROCESSED
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|FEED/GRAIN TERMEL|DRYING           |TONS GRAIN PROCESSED
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|FEED/GRAIN CNTRYE|SHIPNG/RECEIVNG  |TONS GRAIN PROCESSED
INDUSTRIAL PROCES|FOOD/AGRICULTURAL|FEED/GRAIN CNTRYE|TRANSFER/CONVEYNG|TONS GRAIN PROCESSED
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INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FEED/GRAIN CNTRYE	DRYING	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FEED/GRAIN	OTHER/NOT CLASIFD	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	GRAIN PROCESSING	CORN MEAL	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	GRAIN PROCESSING	SOY BEAN	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	GRAIN PROCESSING	BARLEY/WHEATCLEAN	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	GRAIN PROCESSING	MILO CLEANER	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	GRAIN PROCESSING	BARLEYFLOUR MILL	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	GRAIN PROCESSING	WET CORN MILLING	TONS OF PRODUCT
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	GRAIN PROCESSING	WHEAT FLOUR MILL	TONS PRODUCT
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	GRAIN PROCESSING	OTHER/NOT CLASFD	TONS PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FEED MANUFACTURE	BARLEY FEED-GENL	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FEED MANUFACTURE	OTHER/NOT CLASFD	TONS PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FERMENTATN-BEER	GRAIN HANDLING	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FERMENTATN-BEER	DRYING SPNT GRAIN	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FERMENTATION-BEER	BREWING	THOUSANDS OF GALLONS
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FERMENTATION-BEER	OTHER/NOT CLASFD	GALLONS PRODUCT
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FERMENTATION-BEER	OTHER/NOT CLASFD	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FERMENTATN-WHISKY	GRAIN HANDLING	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FERMENTATN-WHISKY	DRYING SPNT GRAIN	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FERMENTATN-WHISKY	AGING	TONS GRAIN PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FERMENTATN-WHISKY	OTHER/NOT CLASFD	GALLONS PRODUCT
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FERMENTATN-WINE	GENERAL	GALLONS PRODUCT
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FISH MEAL	COOKERS-FRESHFISH	TONS FISH MEAL PRODUCED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FISH MEAL	COOKERS-STALEFISH	TONS FISH MEAL PRODUCED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FISH MEAL	DRIERS	TONS FISH SCRAP
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	FISH MEAL	OTHER/NOT CLASIFD	TONS PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	MEAT SMOKING	GENERAL	TONS MEAT SMOKED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	STARCH MFG	GENERAL	TONS STARCH PRODUCED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	SUGAR CANE PROCES	GENERAL	TONS SUGAR PRODUCED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	SUGAR CANE PROCES	OTHER/NOT CLASIFD	TONS PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	SUGAR BEET PROCES	DRYER ONLY	TONS RAW BEETS
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	SUGAR BEET PROCES	OTHER/NOT CLASIFD	TONS RAW BEETS
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	PEANUT PROCESSING	OIL/NOT CLASFD	TONS PRODUCT
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	PEANUT PROCESSING	OTHER/NOT CLASFD	TONS PROCESSED
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	CANDY/CONFECTNRY	OTHER/NOT CLASFD	TONS PRODUCT
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	DAIRY PRODUCTS	MILK SPRAY-DRYER	TONS PRODUCT
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	DAIRY PRODUCTS	OTHER/NOT CLASFD	TONS PRODUCT
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	OTHER/NOT CLASIFD	SPECIFY IN REMARK	TONS PROCESSED (INPUT)
INDUSTRIAL PROCES	FOOD/AGRICULTURAL	OTHER/NOT CLASIFD	SPECIFY IN REMARK	TONS PRODUCED (FINISHED)
INDUSTRIAL PROCES	PRIMARY METALS	ALUMINUM ORE-BAUX	CRUSHING/HANDLING	TONS OF ORE
INDUSTRIAL PROCES	PRIMARY METALS	AL ORE-ELECROREDN	PREBAKE CELLS	TONS ALUMINUM PRODUCED
INDUSTRIAL PROCES	PRIMARY METALS	AL ORE-ELECROREDN	HORIZSTD SODERBRG	TONS ALUMINUM PRODUCED
INDUSTRIAL PROCES	PRIMARY METALS	AL ORE-ELECROREDN	VERTSTD SODERBRG	TONS ALUMINUM PRODUCED
INDUSTRIAL PROCES	PRIMARY METALS	AL ORE-ELECROREDN	MATERIALS HANDLNG	TONS ALUMINUM PRODUCED
INDUSTRIAL PROCES	PRIMARY METALS	AL ORE-ELECROREDN	ANODE BAKE FURNCE	TONS ALUMINUM PRODUCED
INDUSTRIAL PROCES	PRIMARY METALS	ALUMINUM OPERATN	OTHER/NOT CLASFD	TONS ALUMINUM PRODUCED
INDUSTRIAL PROCES	PRIMARY METALS	AL ORE-CALC ALHYD	GENERAL	TONS ALUMINUM PRODUCED
INDUSTRIAL PROCES	PRIMARY METALS	COKE MET BYPRODUC	GENERAL	TONS COAL CHARGED
INDUSTRIAL PROCES	PRIMARY METALS	COKE-MET BYPRODUC	OVEN CHARGING	TONS COAL CHARGED

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INDUSTRIAL PROCES|PRIMARY METALS   |COKE-MET BYPRODUC|QUENCHING        |TONS COAL CHARGED
INDUSTRIAL PROCES|PRIMARY METALS   |COKE-MET BYPRODUC|UNLOADING        |TONS COAL CHARGED
INDUSTRIAL PROCES|PRIMARY METALS   |COKE-MET BYPRODUC|UNDERFIRING      |TONS COAL CHARGED
INDUSTRIAL PROCES|PRIMARY METALS   |COKE-MET BYPRODUC|OTHER/NOT CLASFD |TONS COAL CHARGED
INDUSTRIAL PROCES|PRIMARY METALS   |COKE MET-BEEHIVE |GENERAL          |TONS COAL CHARGED
INDUSTRIAL PROCES|PRIMARY METALS   |COPPER SMELTER   |TOTAL/GENERAL    |TONS CONCENTRATED ORE
INDUSTRIAL PROCES|PRIMARY METALS   |COPPER SMELTER   |ROASTING         |TONS CONCENTRATED ORE
INDUSTRIAL PROCES|PRIMARY METALS   |COPPER SMELTER   |SMELTING         |TONS CONCENTRATED ORE
INDUSTRIAL PROCES|PRIMARY METALS   |COPPER SMELTER   |CONVERTING       |TONS CONCENTRATED ORE
INDUSTRIAL PROCES|PRIMARY METALS   |COPPER SMELTER   |REFINING         |TONS CONCENTRATED ORE
INDUSTRIAL PROCES|PRIMARY METALS   |COPPER MINE      |ORE DRYER        |TONS OF ORE
INDUSTRIAL PROCES|PRIMARY METALS   |COPPER SMELTER   |OTHER/NOT CLASFD |TONS CONCENTRATED ORE
INDUSTRIAL PROCES|PRIMARY METALS   |FERALLOY OPEN FNC|50% FESI         |TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |FERALLOY OPEN FNC|75% FESI         |TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |FERALLOY OPEN FNC|90% FESI         |TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |FERALLOY OPEN FNC|SILICON METAL    |TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |FERALLOY OPEN FNC|SILICOMANGANESE  |TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |FERROALLOY       |SCREENING        |TONS PROCESSED
INDUSTRIAL PROCES|PRIMARY METALS   |FERROALLOY       |ORE DRYER        |TONS PROCESSED
INDUSTRIAL PROCES|PRIMARY METALS   |FERROALLOY       |LOWCARB CR-REACTR|TONS PROCESSED
INDUSTRIAL PROCES|PRIMARY METALS   |FERROALLOY       |OTHER/NOT CLASFD |TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |FERALOY SEMCOVFNC|FEROMANGANESE    |TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |FERALOY COVD FNC |GENERAL          |TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |IRON PRODUCTION  |BLAST FNC-ORECHG |TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |IRON PRODUCTION  |BLAST FNC-AGLCHG |TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |IRON PRODUCTION  |SINTERING GENERAL|TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |IRON PRODUCTION  |ORE-CRUSH/HANDLE |TONS OF ORE
INDUSTRIAL PROCES|PRIMARY METALS   |IRON PRODUCTION  |SCARFING         |TONS PROCESSED
INDUSTRIAL PROCES|PRIMARY METALS   |IRON PRODUCTION  |SAND HANDLING OPN|TONS HANDLED
INDUSTRIAL PROCES|PRIMARY METALS   |IRON PRODUCTION  |MOLD OVENS       |TONS SAND BAKED
INDUSTRIAL PROCES|PRIMARY METALS   |IRON PRODUCTION  |OTHER/NOT CLASFD |TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |STEEL PRODUCTION |OPNHEARTH OXLANCE|TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |STEEL PRODUCTION |OPNHEARTH NOXLNCE|TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |STEEL PRODUCTION |BOF-GENERAL      |TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |STEEL PRODUCTION |ELECT ARC W/LANCE|TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |STEEL PRODUCTION |ELECT ARC NOLANCE|TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |STEEL PRODUCTION |OTHER/NOT CLASFD |TONS PRODUCED
INDUSTRIAL PROCES|PRIMARY METALS   |LEAD SMELTERS    |SINTER/CRUSHING  |TONS CONCENTRATED ORE
INDUSTRIAL PROCES|PRIMARY METALS   |LEAD SMELTERS    |BLAST FURNACE    |TONS CONCENTRATED ORE
INDUSTRIAL PROCES|PRIMARY METALS   |LEAD SMELTERS    |REVERB FURNACE   |TONS CONCENTRATED ORE
INDUSTRIAL PROCES|PRIMARY METALS   |LEAD SMELTERS    |OTHER/NOT CLASFD |TONS CONCENTRATED ORE
INDUSTRIAL PROCES|PRIMARY METALS   |MOLYBDNUM MINING |GENERAL          |HUNDREDS OF TONS MINED
INDUSTRIAL PROCES|PRIMARY METALS   |MOLYBDNUM MILLING|GENERAL          |TONS PRODUCT
INDUSTRIAL PROCES|PRIMARY METALS   |MOLYBDNUM PROCES |OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|PRIMARY METALS   |TITANIUM PROCESS |CHLORINATION STAT|TONS PRODUCT
INDUSTRIAL PROCES|PRIMARY METALS   |TITANIUM PROCES  |OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|PRIMARY METALS   |GOLD             |MINING/PROCESSING|TONS ORE
INDUSTRIAL PROCES|PRIMARY METALS   |BARIUM           |ORE GRIND        |TONS PROCESSED
INDUSTRIAL PROCES|PRIMARY METALS   |BARIUM           |REDUCTN KILN     |TONS PROCESSED
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INDUSTRIAL PROCESIPRIMARY METALS   IBARIUM           IDRIERS/CALCINERS ITONS PROCESSED
INDUSTRIAL PROCESIPRIMARY METALS   IBARIUM           IOTHER/NOT CLASFD ITONS PROCESSED
INDUSTRIAL PROCESIPRIMARY METALS   IZINC SMELTING    IGENERAL          ITONS PROCESSED
INDUSTRIAL PROCESIPRIMARY METALS   IZINC SMELTING    IROASTNG/MULT-HRTHITONS PROCESSED
INDUSTRIAL PROCESIPRIMARY METALS   IZINC SMELTING    ISINTERING        ITONS PROCESSED
INDUSTRIAL PROCESIPRIMARY METALS   IZINC SMELTING    IHORIZ RETORTS    ITONS PROCESSED
INDUSTRIAL PROCESIPRIMARY METALS   IZINC SMELTING    IVERT RETORTS     ITONS PROCESSED
INDUSTRIAL PROCESIPRIMARY METALS   IZINC SMELTING    IELECTROLYTIC PROCITONS PROCESSED
INDUSTRIAL PROCESIPRIMARY METALS   IZINC SMELTING    IOTHER/NOT CLASFD ITONS PROCESSED
INDUSTRIAL PROCESIPRIMARY METALS   IOTHER/NOT CLASFD ISPECIFY IN REMARKITONS PRODUCED
INDUSTRIAL PROCESISECONDARY METALS IALUMINUM OPERATN ISWEATINGFURNACE  ITONS PRODUCED
INDUSTRIAL PROCESISECONDARY METALS IALUMINUM OPERATN ISMELT-CRUCIBLE   ITONS METAL PRODUCED
INDUSTRIAL PROCESISECONDARY METALS IALUMINUM OPERATN ISMELT-REVERB FNC ITONS METAL PRODUCED
INDUSTRIAL PROCESISECONDARY METALS IALUMINUM OPERATN ICHLORINATN STATN ITONS METAL PRODUCED
INDUSTRIAL PROCESISECONDARY METALS IALUMINUM OPERATN IFOIL ROLLING     ITONS PRODUCT
INDUSTRIAL PROCESISECONDARY METALS IALUMINUM OPERATN IFOIL CONVERTING  ITONS PRODUCED
INDUSTRIAL PROCESISECONDARY METALS IALUMINUM OPERATN ICAN MANUFACTURE  ITONS PRODUCED
INDUSTRIAL PROCESISECONDARY METALS IALUMINUM OPERATN IROLL-DRAW-EXTRUDEITONS PRODUCED
INDUSTRIAL PROCESISECONDARY METALS IALUMINUM OPERATN IOTHER/NOT CLASFD ITONS PRODUCED
INDUSTRIAL PROCESISECONDARY METALS IBRASS/BRONZ MELT IBLAST FNC        ITONS CHARGE
INDUSTRIAL PROCESISECONDARY METALS IBRASS/BRONZ MELT ICRUCIBLE FNC     ITONS CHARGE
INDUSTRIAL PROCESISECONDARY METALS IBRASS/BRONZ MELT ICUPOLA FNC       ITONS CHARGE
INDUSTRIAL PROCESISECONDARY METALS IBRASS/BRONZ MELT IELECT INDUCTION  ITONS CHARGE
INDUSTRIAL PROCESISECONDARY METALS IBRASS/BRONZ MELT IREVERB FNC       ITONS CHARGE
INDUSTRIAL PROCESISECONDARY METALS IBRASS/BRONZ MELT IROTARY FNC       ITONS CHARGE
INDUSTRIAL PROCESISECONDARY METALS IBRASS/BRONZ MELT IOTHER/NOT CLASIFDITONS PRODUCED
INDUSTRIAL PROCESISECONDARY METALS IGRAY IRON        ICUPOLA           ITONS METAL CHARGE
INDUSTRIAL PROCESISECONDARY METALS IGRAY IRON        IREVERB FNC       ITONS METAL CHARGE
INDUSTRIAL PROCESISECONDARY METALS IGRAY IRON        IELECT INDUCTION  ITONS METAL CHARGE
INDUSTRIAL PROCESISECONDARY METALS IGRAY IRON        IANNEALING OPERATNITONS METAL CHARGE
INDUSTRIAL PROCESISECONDARY METALS IGRAY IRON        IMISC CAST-FABCTN ITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS IGRAY IRON        IGRINDING-CLEANINGITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS IGRAY IRON        IOTHER/NOT CLASIFDITONS METAL CHARGE
INDUSTRIAL PROCESISECONDARY METALS ILEAD SMELT SEC   IPOT FURNACE      ITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS ILEAD SMELT SEC   IREVERB FNC       ITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS ILEAD SMELT SEC   IBLAST/CUPOLA FNC ITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS ILEAD SMELT SEC   IROTARY REVERB FNCITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS ILEAD SMELT SEC   ILEAD OXIDE MFG   ITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS ILEAD SMELT SEC   IOTHER/NOT CLASIFDITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS ILEAD BATTERY     IGENERAL          ITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS ILEAD BATTERY     IOTHER/NOT CLASIFDITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS IMAGNESIUM SEC    IPOT FURNACE      ITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS IMAGNESIUM SEC    IOTHER/NOT CLASIFDITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS ISTEEL FOUNDRY    IELECTRIC ARC FNC ITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS ISTEEL FOUNDRY    IOPEN HEARTH FNC  ITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS ISTEEL FOUNDRY    IOPEN HEARTH LANCDITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS ISTEEL FOUNDRY    IHEAT-TREAT FNC   ITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS ISTEEL FOUNDRY    IINDUCTION FURNACEITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS ISTEEL FOUNDRY    IOTHER/NOT CLASIFDITONS PROCESSED
INDUSTRIAL PROCESISECONDARY METALS IZINC SEC         IRETORT FNC       ITONS PRODUCED
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INDUSTRIAL PROCES|SECONDARY METALS |ZINC SEC         |HORIZ MUFFLE FNC |TONS PRODUCED
INDUSTRIAL PROCES|SECONDARY METALS |ZINC SEC         |POT FURNACE      |TONS PRODUCED
INDUSTRIAL PROCES|SECONDARY METALS |ZINC SEC         |KETTLE-SWEAT FNC |TONS PRODUCED
INDUSTRIAL PROCES|SECONDARY METALS |ZINC SEC         |GALVANIZING KETTL|TONS PRODUCED
INDUSTRIAL PROCES|SECONDARY METALS |ZINC SEC         |CALCINING KILN   |TONS PRODUCED
INDUSTRIAL PROCES|SECONDARY METALS |ZINC SEC         |CONCENTRATE DRYER|TONS PROCESSED
INDUSTRIAL PROCES|SECONDARY METALS |ZINC SEC         |REVERB-SWEAT FNC |TONS PRODUCED
INDUSTRIAL PROCES|SECONDARY METALS |ZINC SEC         |OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|SECONDARY METALS |MALLEABLE IRON   |ANNEALING OPERATN|TONS METAL CHARGE
INDUSTRIAL PROCES|SECONDARY METALS |MALLEABLE IRON   |OTHER/NOT CLASIFD|TONS METAL CHARGE
INDUSTRIAL PROCES|SECONDARY METALS |NICKEL           |FLUX FURNACE     |TONS PROCESSED
INDUSTRIAL PROCES|SECONDARY METALS |NICKEL           |OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|SECONDARY METALS |ZIRCONIUM        |OXIDE KILN       |TONS PROCESSED
INDUSTRIAL PROCES|SECONDARY METALS |ZIRCONIUM        |OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|SECONDARY METALS |FURNACE ELECTRODE|CALCINATION      |TONS PROCESSED
INDUSTRIAL PROCES|SECONDARY METALS |FURNACE ELECTRODE|MIXING           |TONS PROCESSED
INDUSTRIAL PROCES|SECONDARY METALS |FURNACE ELECTRODE|PITCH TREATING   |TONS PROCESSED
INDUSTRIAL PROCES|SECONDARY METALS |FURNACE ELECTRODE|BAKE FURNACES    |TONS PROCESSED
INDUSTRIAL PROCES|SECONDARY METALS |FURNACE ELECTRODE|OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|SECONDARY METALS |MISC CAST&FABRCTN|SPECIFY IN REMARK|TONS PRODUCED
INDUSTRIAL PROCES|SECONDARY METALS |OTHER/NOT CLASIFD|SPECIFY IN REMARK|TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |ASPHALT ROOFING  |BLOWING OPERATION|TONS SATURATED FELT PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |ASPHALT ROOFING  |DIPPING ONLY     |TONS SATURATED FELT PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |ASPHALT ROOFING  |SPRAYING ONLY    |TONS SATURATED FELT PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |ASPHALT ROOFING  |DIPPING/SPRAYING |TONS SATURATED FELT PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |ASPHALT ROOFING  |OTHER/NOT CLASIFD|TONS SATURATED FELT PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |ASPHALTIC CONCRET|ROTARY DRYER     |TONS PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |ASPHALTIC CONCRET|OTHER SOURCES    |TONS PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |ASPHALTIC CONCRET|OTHER/NOT CLASIFD|TONS PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |BRICK MANUFACTURE|DRYING-RAW MTL   |TONS PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |BRICK MANUFACTURE|GRINDING-RAW MTL |TONS PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |BRICK MANUFACTURE|STORAGE-RAW MTL  |TONS PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |BRICK MANUFACTURE|CURING GAS FIRED |TONS PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |BRICK MANUFACTURE|CURING OIL FIRED |TONS PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |BRICK MANUFACTURE|CURING COAL FIRED|TONS PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |BRICK MANUFACTURE|OTHER/NOT CLASIFD|TONS PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |CALCIUM CARBIDE  |ELECTRIC FNC     |TONS PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |CALCIUM CARBIDE  |COKE DRYER       |TONS PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |CALCIUM CARBIDE  |FNC ROOM VENTS   |TONS PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |CALCIUM CARBIDE  |OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |CASTABLE REFRACTY|RAWMATL DRYER    |TONS FEED MATERIAL
INDUSTRIAL PROCES|MINERAL PRODUCTS |CASTABLE REFRACTY|RAWMATL CRUSH/PRC|TONS FEED MATERIAL
INDUSTRIAL PROCES|MINERAL PRODUCTS |CASTABLE REFRACTY|ELECTRIC ARC MELT|TONS FEED MATERIAL
INDUSTRIAL PROCES|MINERAL PRODUCTS |CASTABLE REFRACTY|CURING OVEN      |TONS FEED MATERIAL
INDUSTRIAL PROCES|MINERAL PRODUCTS |CASTABLE REFRACTY|MOLD/SHAKEOUT    |TONS FEED MATERIAL
INDUSTRIAL PROCES|MINERAL PRODUCTS |CASTABLE REFRACTY|OTHER/NOT CLASIFD|TONS FEED MATERIAL
INDUSTRIAL PROCES|MINERAL PRODUCTS |CEMENT MFG DRY   |KILNS            |BARRELS CEMENT PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |CEMENT MFG DRY   |DRYERS/GRINDERETC|BARRELS CEMENT PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |CEMENT MFG DRY   |KILNS-OIL FIRED  |TONS CEMENT PRODUCED
INDUSTRIAL PROCES|MINERAL PRODUCTS |CEMENT MFG DRY   |KILNS-GAS FIRED  |TONS CEMENT PRODUCED
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INDUSTRIAL PROCESIMINERAL PRODUCTS ICEMENT MFG DRY   IKILNS-COAL FIRED ITONS CEMENT PRODUCED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICEMENT MFG DRY   IOTHER/NOT CLASIFDITONS CEMENT PRODUCED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICEMENT MFG WET   IKILNS            IBARRELS CEMENT PRODUCED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICEMENT MFG WET   IDRYERS/GRINDERETCIBARRELS CEMENT PRODUCED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICEMENT MFG WET   IKILNS-OIL FIRED  ITONS CEMENT PRODUCED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICEMENT MFG WET   IKILNS GAS FIRED  ITONS CEMENT PRODUCED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICEMENT MFG WET   IKILNS-COAL FIRED ITONS CEMENT PRODUCED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICEMENT MFG WET   IOTHER/NOT CLASIFDITONS CEMENT PRODUCED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICERAMIC/CLAY MFG IDRYING           ITONS INPUT TO PROCESS
INDUSTRIAL PROCESIMINERAL PRODUCTS ICERAMIC/CLAY MFG IGRINDING         ITONS INPUT TO PROCESS
INDUSTRIAL PROCESIMINERAL PRODUCTS ICERAMIC/CLAY MFG ISTORAGE          ITONS INPUT TO PROCESS
INDUSTRIAL PROCESIMINERAL PRODUCTS ICERAMIC/CLAY MFG IOTHER/NOT CLASIFDITONS PRODUCED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICLAY/FLYASHSINTERIFLYASH           ITONS FINISHED PRODUCT
INDUSTRIAL PROCESIMINERAL PRODUCTS ICLAY/FLYASHSINTERICLAY/COKE        ITONS FINISHED PRODUCT
INDUSTRIAL PROCESIMINERAL PRODUCTS ICLAY/FLYASHSINTERINATURAL CLAY     ITONS FINISHED PRODUCT
INDUSTRIAL PROCESIMINERAL PRODUCTS ICLAY/FLYASHSINTERIOTHER/NOT CLASIFDITONS PRODUCED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICOAL CLEANING    ITHERM/FLUID BED  ITONS COAL DRIED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICOAL CLEANING    ITHERM/FLASH      ITONS COAL DRIED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICOAL CLEANING    ITHERM/MULTILOUVRDITONS COAL DRIED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICOAL CLEANING    IOTHER/NOT CLASIFDITONS COAL CLEANED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICONCRETE BATCHINGIGENERAL          ICUBIC YARDS CONCRETE PRODUCED
INDUSTRIAL PROCESIMINERAL PRODUCTS ICONCRETE BATCHINGIASBEST/CEMNT PDTSITONS PRODUCT
INDUSTRIAL PROCESIMINERAL PRODUCTS ICONCRETE BATCHINGIOTHER/NOT CLASFD ITONS PRODUCT
INDUSTRIAL PROCESIMINERAL PRODUCTS IFIBERGLASS MFG   IREVERBFNC-REGENEXITONS MATERIAL PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS IFIBERGLASS MFG   IREVERBFNC-RECUPEXITONS MATERIAL PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS IFIBERGLASS MFG   IELECTRIC IND FNC ITONS MATERIAL PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS IFIBERGLASS MFG   IFORMING LINE     ITONS MATERIAL PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS IFIBERGLASS MFG   ICURING OVEN      ITONS MATERIAL PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS IFIBERGLASS MFG   IOTHER/NOT CLASIFDITONS PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS IFRIT MFG         IROTARY FNC GENL  ITONS CHARGE
INDUSTRIAL PROCESIMINERAL PRODUCTS IFRIT MFG         IOTHER/NOT CLASIFDITONS CHARGED
INDUSTRIAL PROCESIMINERAL PRODUCTS IGLASS MFG        ISODALIME GENL FNCITONS GLASS PRODUCED
INDUSTRIAL PROCESIMINERAL PRODUCTS IGLASS MFG        IRAW MAT REC/STORGITONS PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS IGLASS MFG        IBATCHING/MIXING  ITONS PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS IGLASS MFG        IMOLTEN HOLD TANKSITONS PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS IGLASS MFG        IOTHER/NOT CLASIFDITONS PRODUCED
INDUSTRIAL PROCESIMINERAL PRODUCTS IGYPSUM MFG       IRW MTL DRYER     ITONS THROUGHPUT
INDUSTRIAL PROCESIMINERAL PRODUCTS IGYPSUM MFG       IPRIMARY GRINDER  ITONS THROUGHPUT
INDUSTRIAL PROCESIMINERAL PRODUCTS IGYPSUM MFG       ICALCINER         ITONS THROUGHPUT
INDUSTRIAL PROCESIMINERAL PRODUCTS IGYPSUM MFG       ICONVEYING        ITONS THROUGHPUT
INDUSTRIAL PROCESIMINERAL PRODUCTS IGYPSUM MFG       IOTHER/NOT CLASIFDITONS THROUGHPUT
INDUSTRIAL PROCESIMINERAL PRODUCTS ILIME MFG         IPRIMARY CRUSHING ITONS PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS ILIME MFG         ISECNDRY CRUSHING ITONS PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS ILIME MFG         ICALCINNG-VERTKILNITONS PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS ILIME MFG         ICALCINNG-ROTYKILNITONS PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS ILIME MFG         IOTHER/NOT CLASIFDITONS PROCESSED
INDUSTRIAL PROCESIMINERAL PRODUCTS IMINERAL WOOL     ICUPOLA           ITONS CHARGE
INDUSTRIAL PROCESIMINERAL PRODUCTS IMINERAL WOOL     IREVERB FNC       ITONS CHARGE
INDUSTRIAL PROCESIMINERAL PRODUCTS IMINERAL WOOL     IBLOW CHAMBER     ITONS CHARGE
INDUSTRIAL PROCESIMINERAL PRODUCTS IMINERAL WOOL     ICURING OVEN      ITONS CHARGE
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INDUSTRIAL PROCES|MINERAL PRODUCTS |MINERAL WOOL      |COOLER            |TONS CHARGE
INDUSTRIAL PROCES|MINERAL PRODUCTS |MINERAL WOOL      |OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |PERLITE MFG       |VERTICAL FNC GEN |TONS CHARGE
INDUSTRIAL PROCES|MINERAL PRODUCTS |PERLITE MFG       |OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |PHOSPHATE ROCK    |DRYING           |TONS PHOSPHATE ROCK
INDUSTRIAL PROCES|MINERAL PRODUCTS |PHOSPHATE ROCK    |GRINDING         |TONS PHOSPHATE ROCK
INDUSTRIAL PROCES|MINERAL PRODUCTS |PHOSPHATE ROCK    |TRANSFER/STORAGE |TONS PHOSPHATE ROCK
INDUSTRIAL PROCES|MINERAL PRODUCTS |PHOSPHATE ROCK    |OPEN STORAGE     |TONS PHOSPHATE ROCK
INDUSTRIAL PROCES|MINERAL PRODUCTS |PHOSPHATE  ROCK   |OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |STONE QUARY/PROC  |PRIMARY CRUSHING |TONS RAW MATERIAL
INDUSTRIAL PROCES|MINERAL PRODUCTS |STONE QUARY/PROC  |SEC CRUSH/SCREEN |TONS RAW MATERIAL
INDUSTRIAL PROCES|MINERAL PRODUCTS |STONE QUARY/PROC  |TERT CRUSH/SCREEN|TONS RAW MATERIAL
INDUSTRIAL PROCES|MINERAL PRODUCTS |STONE QUARY/PROC  |RECRUSH/SCREENING|TONS RAW MATERIAL
INDUSTRIAL PROCES|MINERAL PRODUCTS |STONE QUARY/PROC  |FINES MILL       |TONS RAW MATERIAL
INDUSTRIAL PROCES|MINERAL PRODUCTS |STONE QUARY/PROC  |SCREEN/CONVY/HNDL|TONS PRODUCT
INDUSTRIAL PROCES|MINERAL PRODUCTS |STONE QUARY/PROC  |OPEN STORAGE     |TONS PRODUCT STORED
INDUSTRIAL PROCES|MINERAL PRODUCTS |STONE QUARRY PROC|CUT STONE-GENERAL|TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |STONE QUARRY PROC|BLASTING-GENERAL |TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |STONE QUARRY PROC|OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |SALT MINING       |GENERAL          |TONS MINED
INDUSTRIAL PROCES|MINERAL PRODUCTS |POTASH PRODUCTION|MINE-GRIND/DRY   |TONS ORE
INDUSTRIAL PROCES|MINERAL PRODUCTS |POTASH PRODUCTION|OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |CALCIUM BORATE    |MINING/PROCESSING|TONS PRODUCT
INDUSTRIAL PROCES|MINERAL PRODUCTS |CALCIUM BORATE    |OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |MG CARBONATE      |MINE/PROCESS     |TONS PRODUCT
INDUSTRIAL PROCES|MINERAL PRODUCTS |MG CARBONATE      |OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |SAND/GRAVEL       |CRUSHING/SCREENIN|TONS PRODUCT
INDUSTRIAL PROCES|MINERAL PRODUCTS |SAND/GRAVEL       |OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |DIATOMACOUSERTH   |HANDLING         |TONS PRODUCT
INDUSTRIAL PROCES|MINERAL PRODUCTS |DIATOMACOUS EARTH|OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |CERAMIC ELECT PTS|OTHER/NOT CLASIFD|TONS PROCESSED
INDUSTRIAL PROCES|MINERAL PRODUCTS |OTHER/NOT CLASIFD|SPECIFY IN REMARK|TONS PRODUCT
INDUSTRIAL PROCES|PETROLEUM INDRY  |PROCESS HEATER    |OIL              |1000 BARRELS OIL BURNED
INDUSTRIAL PROCES|PETROLEUM INDRY  |PROCESS HEATER    |GAS              |1000 CUBIC FEET GAS BURNED
INDUSTRIAL PROCES|PETROLEUM INDRY  |PROCESS HEATER    |OIL              |1000 GALLONS OIL BURNED
INDUSTRIAL PROCES|PETROLEUM INDRY  |PROCESS HEATER    |GAS              |MILLION CUBIC FEET BURNED
INDUSTRIAL PROCES|PETROLEUM INDRY  |FLUID CRACKERS    |GENERAL (FCC)    |1000 BARRELS FRESH FEED
INDUSTRIAL PROCES|PETROLEUM INDRY  |MOV-BED CAT-CRACK|GENERAL (TCC)    |1000 BARRELS FRESH FEED
INDUSTRIAL PROCES|PETROLEUM INDRY  |BLOW-DOWN SYSTM   |W/CONTROLS       |1000 BARRELS REFINERY CAPACITY
INDUSTRIAL PROCES|PETROLEUM INDRY  |BLOW-DOWN SYSTM   |W/O CONTROLS     |1000 BARRELS REFINERY CAPACITY
INDUSTRIAL PROCES|PETROLEUM INDRY  |PROCESS DRAINS    |GEN W/CONTROL    |1000 BARRELS WASTE WATER
INDUSTRIAL PROCES|PETROLEUM INDRY  |PROCESS DRAINS    |GEN W/O CONTROL  |1000 BARRELS WASTE WATER
INDUSTRIAL PROCES|PETROLEUM INDRY  |VACUUM JETS       |W/CONTROL        |1000 BARRELS VACUUM DISTILLATION
INDUSTRIAL PROCES|PETROLEUM INDRY  |VACUUM JETS       |W/O CONTROL      |1000 BARRELS VACUUM DISTILLATION
INDUSTRIAL PROCES|PETROLEUM INDRY  |COOLING TOWERS    |                 |MILLION GALLONS COOLING WATER
INDUSTRIAL PROCES|PETROLEUM INDRY  |MISCELLANEOUS     |PIPE/VALVE-FLANGE|1000 BARRELS REFINERY CAPACITY
INDUSTRIAL PROCES|PETROLEUM INDRY  |MISCELLANEOUS     |VESL RELIEF VALUE|1000 BARRELS REFINERY CAPACITY
INDUSTRIAL PROCES|PETROLEUM INDRY  |MISCELLANEOUS     |PUMP SEALS       |1000 BARRELS REFINERY CAPACITY
INDUSTRIAL PROCES|PETROLEUM INDRY  |MISCELLANEOUS     |COMPRESR SEALS   |1000 BARRELS REFINERY CAPACITY
INDUSTRIAL PROCES|PETROLEUM INDRY  |MISCELLANEOUS     |OTHER-GENL       |1000 BARRELS REFINERY CAPACITY
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SCC CATEGORY NAMES

I	II	III	IV	UNITS
INDUSTRIAL PROCES	PETROLEUM INDRY	FLARES	NATURAL GAS	MILLIONS OF CUBIC FEET
INDUSTRIAL PROCES	PETROLEUM INDRY	FLARES	OTHER/NOT CLASIFD	MILLIONS OF CUBIC FEET
INDUSTRIAL PROCES	PETROLEUM INDRY	SLUDGE CONVERTER	GENERAL	TONS PROCESSED
INDUSTRIAL PROCES	PETROLEUM INDRY	ASPHALT OXIDIZER	GENERAL	TONS PROCESSED
INDUSTRIAL PROCES	PETROLEUM INDRY	ASPHALT OXIDIZER	OTHER/NOT CLASIFD	TONS PROCESSED
INDUSTRIAL PROCES	PETROLEUM INDRY	FLUID COKING	GENERAL	1000 BARRELS FRESH FEED
INDUSTRIAL PROCES	PETROLEUM INDRY	OTHER/NOT CLASIFD	SPECIFY IN REMARK	TONS PROCESSED
INDUSTRIAL PROCES	PETROLEUM INDRY	OTHER/NOT CLASIFD	SPECIFY IN REMARK	BARRELS-PROCESSED
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFATE PULPNG	BLOWTNK ACCUMULTR	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFATE PULPNG	WASHRS/SCREENS	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFATE PULPNG	MULT-EFFECT EVAP	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFATE PULPNG	RECVY BOLR/DCEVAP	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFATE PULPNG	SMELT DISSOLV TNK	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFATE PULPNG	LIME KILNS	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFATE PULPNG	TURPENTINE CONDSR	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFATE PULPNG	FLUIDBED CALCINER	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFATE PULPING	LIQUOR OXIDN TOWR	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFATE PULPING	OTHER/NOT CLASIFD	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFITE PULPING	LIQUOR RECOVERY	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFITE PULPING	SULFITE TOWER	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFITE PULPING	DIGESTER	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFITE PULPING	SMELT TANK	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFITE PULPING	EVAPORATORS	AIR-DRY TONS UNBLEACHED PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFITE PULPING	PULP DIGESTER	TONS AIR DRY PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	SULFITE PULPING	OTHER/NOT CLASIFD	TONS AIR DRY PULP
INDUSTRIAL PROCES	WOOD PRODUCTS	PULPBOARD MFG	PAPERBOARD-GEN	TONS FINISHED PRODUCT
INDUSTRIAL PROCES	WOOD PRODUCTS	PULPBOARD MFG	FIBERBOARD-GEN	TONS FINISHED PRODUCT
INDUSTRIAL PROCES	WOOD PRODUCTS	PULPBOARD MFG	OTHER/NOT CLASIFD	TONS FINISHED PRODUCT
INDUSTRIAL PROCES	WOOD PRODUCTS	PRESSURE TREATING	CREOSOTE	TONS OF WOOD TREATED
INDUSTRIAL PROCES	WOOD PRODUCTS	PRESSURE TREATING	OTHER/NOT CLASIFD	TONS OF WOOD TREATED
INDUSTRIAL PROCES	WOOD PRODUCTS	TALLOIL/ROSIN	GENERAL	TONS OF PRODUCT
INDUSTRIAL PROCES	WOOD PRODUCTS	PLYWOOD/PARTBOARD	VENEER DRYER	TONS PROCESSED
INDUSTRIAL PROCES	WOOD PRODUCTS	PLYWOOD/PARTBOARD	SANDING	TONS PROCESSED
INDUSTRIAL PROCES	WOOD PRODUCTS	PLYWOOD/PARTBOARD	OTHER/NOT CLASIFD	TONS PROCESSED
INDUSTRIAL PROCES	WOOD PRODUCTS	SAWMILL OPERATNS	OTHER/NOT CLASIFD	TONS PROCESSED
INDUSTRIAL PROCES	WOOD PRODUCTS	EXCELSIOR MFG	OTHER/NOT CLASIFD	TONS PROCESSED
INDUSTRIAL PROCES	WOOD PRODUCTS	CORK PROCESSING	OTHER/NOT CLASIFD	TONS PROCESSED
INDUSTRIAL PROCES	WOOD PRODUCTS	FURNITURE MFG	OTHER/NOT CLASIFD	TONS PROCESSED
INDUSTRIAL PROCES	WOOD PRODUCTS	OTHER/NOT CLASIFD	SPECIFY IN REMARK	TONS PROCESSED
INDUSTRIAL PROCES	METAL FABRICATION	IRON/STEEL	MISC HARDWARE	TONS OF PRODUCT
INDUSTRIAL PROCES	METAL FABRICATION	IRON/STEEL	FARM MACHINERY	TONS OF PRODUCT
INDUSTRIAL PROCES	METAL FABRICATION	IRON/STEEL	OTHER/NOT CLASIFD	TONS PROCESSED
INDUSTRIAL PROCES	METAL FABRICATION	PLATING OPERATONS	OTHER/NOT CLASIFD	TONS PLATED
INDUSTRIAL PROCES	METAL FABRICATION	CAN MAKING OPRNS	OTHER/NOT CLASIFD	TONS PRODUCT
INDUSTRIAL PROCES	METAL FABRICATION	OTHER/NOT CLASIFD	SPECIFY IN REMARK	TONS PROCESSED
INDUSTRIAL PROCES	LEATHER PRODUCTS	OTHER/NOT CLASIFD	SPECIFY IN REMARK	TONS PROCESSED
INDUSTRIAL PROCES	TEXTILE MFG	GENERAL FABRICS	YARN PREP/BLEACH	TONS PROCESSED
INDUSTRIAL PROCES	TEXTILE MFG	GENERAL FABRICS	OTHER/NOT SPECIFD	TONS PROCESSED
INDUSTRIAL PROCES	TEXTILE MFG	RUBERIZED FABRICS	OTHER/NOT SPECIFD	TONS PROCESSED
INDUSTRIAL PROCES	TEXTILE MFG	CARPET OPERATNS	OTHER/NOT SPECIFD	TONS PROCESSED

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INDUSTRIAL PROCES	INPROCESS FUEL	ANTHRACITE COAL	OTHER/NOT CLASIFD	TONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	BITUMINOUS COAL	CEMENT KILN	TONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	BITUMINOUS COAL	BRICK KILN/DRY	TONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	BITUMINOUS COAL	GYPSUM KILN/ETC	TONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	BITUMINOUS COAL	COAL DRYERS	TONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	BITUMINOUS COAL	OTHER/NOT CLASIFD	TONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	RESIDUAL OIL	ASPHALT DRYER	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	RESIDUAL OIL	CEMENT KILN	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	RESIDUAL OIL	LIME KILN	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	RESIDUAL OIL	KAOLIN KILN	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	RESIDUAL OIL	METAL MELTING	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	RESIDUAL OIL	BRICK KILN/DRY	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	RESIDUAL OIL	GYPSUM KILN/ETC	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	RESIDUAL OIL	OTHER/NOT CLASIFD	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	DISTILLATE OIL	ASPHALT DRYER	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	DISTILLATE OIL	CEMENT KILN	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	DISTILLATE OIL	LIME KILN	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	DISTILLATE OIL	KAOLIN KILN	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	DISTILLATE OIL	METAL MELTING	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	DISTILLATE OIL	BRICK KILN/DRY	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	DISTILLATE OIL	GYPSUM KILN/ETC	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	DISTILLATE OIL	OTHER/NOT CLASIFD	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	ASPHALT DRYER	MILLION CUBIC FEET BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	CEMENT KILN	MILLION CUBIC FEET BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	LIME KILN	MILLION CUBIC FEET BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	KAOLIN KILN	MILLION CUBIC FEET BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	METAL MELTING	MILLION CUBIC FEET BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	BRICK KILN/DRYS	MILLION CUBIC FEET BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	GYPSUM KILN ETC	MILLION CUBIC FEET BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	OTHER/NOT CLASIFD	MILLION CUBIC FEET BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	PROCESS GAS	OTHER/NOT CLASIFD	MILLION CUBIC FEET BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	COKE	OTHER/NOT CLASIFD	TONS
INDUSTRIAL PROCES	INPROCESS FUEL	WOOD	OTHER/NOT CLASIFD	TONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	OTHER/NOT CLASIFD	SPECIFY IN REMARK	MILLION CUBIC FEET BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	OTHER/NOT CLASIFD	SPECIFY IN REMARK	1000 GALLONS BURNED
INDUSTRIAL PROCES	INPROCESS FUEL	OTHER/NOT CLASIFD	SPECIFY IN REMARK	TONS BURNED
INDUSTRIAL PROCES	OTHER/NOT CLASIFD	SPECIFY IN REMARK		TONS PROCESSED
POINT SC EVAP	CLEANING SOLVENT	DRYCLEANING	PERCHLORETHYLENE	TONS CLOTHES CLEANED
POINT SC EVAP	CLEANING SOLVENT	DRYCLEANING	STODDARD	TONS CLOTHES CLEANED
POINT SC EVAP	CLEANING SOLVENT	DEGREASING	STODDARD	TONS SOLVENT USED
POINT SC EVAP	CLEANING SOLVENT	DEGREASING	OTHER/NOT CLASIFD	TONS SOLVENT USED
POINT SC EVAP	CLEANING SOLVENT	OTHER/NOT CLASIFD	SPECIFY IN REMARK	TONS SOLVENT USED
POINT SC EVAP	SURFACE COATING	PAINT	GENERAL	TONS COATING
POINT SC EVAP	SURFACE COATING	VARNISH/SHELLAC	GENERAL	TONS COATING
POINT SC EVAP	SURFACE COATING	LAQUER	GENERAL	TONS COATING
POINT SC EVAP	SURFACE COATING	ENAMEL	GENERAL	TONS COATING
POINT SC EVAP	SURFACE COATING	PRIMER	GENERAL	TONS COATING
POINT SC EVAP	SURFACE COATING	OTHER/NOT CLASIFD	SPECIFY IN REMARK	TONS COATING
POINT SC EVAP	PETROLEUM STG	FIXED ROOF	BREATHING-PRODUCT	1000 GALLONS STORAGE CAPACITY
POINT SC EVAP	PETROLEUM STG	FIXED ROOF	BREATHING CRUDE	1000 GALLONS STORAGE CAPACITY

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POINT SC EVAP	PETROLEUM STG	FIXED ROOF	WORKING-PRODUCT	1000 GALLONS THROUGHPUT
POINT SC EVAP	PETROLEUM STG	FIXED ROOF	WORKING CRUDE	1000 GALLONS THROUGHPUT
POINT SC EVAP	PETROLEUM STG	FLOATING ROOF	BREATHING PRODUCT	1000 GALLONS STORAGE CAPACITY
POINT SC EVAP	PETROLEUM STG	FLOATING ROOF	WORKING-PRODUCT	1000 GALLONS THROUGHPUT
POINT SC EVAP	PETROLEUM STG	FLOATING ROOF	BREATHING-CRUDE	1000 GALLONS STORAGE CAPACITY
POINT SC EVAP	PETROLEUM STG	FLOATING ROOF	WORKING-CRUDE	1000 GALLONS THROUGHPUT
POINT SC EVAP	PETROLEUM STG	OTHER/NOT CLASIFD	SPECIFY IN REMARK	1000 GAL STORED
POINT SC EVAP	MISC ORGANIC STOR	OTHER/NOT CLASIFD	SPECIFY IN REMARK	TONS STORED
POINT SC EVAP	PRINTING PRESS	DRYERS	GENERAL	TONS SOLVENT
POINT SC EVAP	MISC HC EVAP	OTHER/NOT CLASIFD	SPECIFY IN REMARK	TONS PROCESSED
SOLID WASTE	GOVERNMENT	MUNICIPAL INCIN	MULTIPLE CHAMBER	TONS BURNED
SOLID WASTE	GOVERNMENT	MUNICIPAL INCIN	SINGLE CHAMBER	TONS BURNED
SOLID WASTE	GOVERNMENT	OPEN BURNING DUMP	GENERAL	TONS BURNED
SOLID WASTE	GOVERNMENT	OPEN BURNING DUMP	LANDSCAPE/PRUNING	TONS BURNED
SOLID WASTE	GOVERNMENT	OPEN BURNING DUMP	JET FUEL	HUNDREDS OF GALLONS
SOLID WASTE	GOVERNMENT	INCINERATOR	PATHOLOGICAL	TONS BURNED
SOLID WASTE	GOVERNMENT	INCINERATOR	SLUDGE	TONS DRY SLUDGE
SOLID WASTE	GOVERNMENT	INCINERATOR	CONICAL	TONS BURNED
SOLID WASTE	GOVERNMENT	INCINERATOR	OTHER/NOT CLASIFD	TONS BURNED
SOLID WASTE	GOVERNMENT	AUX.FUEL/NO EMSNS	RESIDUAL OIL	1000 GALLONS
SOLID WASTE	GOVERNMENT	AUX.FUEL/NO EMSNS	DISTILLATE OIL	1000 GALLONS
SOLID WASTE	GOVERNMENT	AUX.FUEL/NO EMSNS	NATURAL GAS	MILLION CUBIC FEET
SOLID WASTE	GOVERNMENT	AUX.FUEL/NO EMSNS	LPG	1000 GALLONS
SOLID WASTE	GOVERNMENT	AUX.FUEL/NO EMSNS	OTHER/NOT CLASIFD	MILLION CUBIC FEET
SOLID WASTE	GOVERNMENT	AUX.FUEL/NO EMSNS	OTHER/NOT CLASIFD	1000 GALLONS
SOLID WASTE	GOVERNMENT	AUX.FUEL/NO EMSNS	OTHER/NOT CLASIFD	TONS
SOLID WASTE	COMM-INST	INCINERATOR GEN	MULTIPLE CHAMBER	TONS BURNED
SOLID WASTE	COMM-INST	INCINERATOR GEN	SINGLE CHAMBER	TONS BURNED
SOLID WASTE	COMM-INST	INCINERATOR GEN	CONTROLLED AIR	TONS BURNED
SOLID WASTE	COMM-INST	INCINERATOR GEN	CONICAL REFUSE	TONS BURNED
SOLID WASTE	COMM-INST	INCINERATOR GEN	CONICAL WOOD	TONS BURNED
SOLID WASTE	COMM-INST	OPEN BURNING	WOOD	TONS BURNED
SOLID WASTE	COMM-INST	APARTMENT INCIN	FLUE FED	TONS BURNED
SOLID WASTE	COMM-INST	APARTMENT INCIN	FLUE FED-MODIFIED	TONS BURNED
SOLID WASTE	COMM-INST	INCINERATOR	PATHOLOGICAL	TONS BURNED
SOLID WASTE	COMM-INST	INCINERATOR	SLUDGE	TONS DRY SLUDGE
SOLID WASTE	COMM-INST	INCINERATOR	OTHER/NOT CLASIFD	TONS BURNED
SOLID WASTE	COMM-INST	AUX.FUEL/NO EMSNS	RESIDUAL OIL	1000 GALLONS
SOLID WASTE	COMM-INST	AUX.FUEL/NO EMSNS	DISTILLATE OIL	1000 GALLONS
SOLID WASTE	COMM-INST	AUX.FUEL/NO EMSNS	NATURAL GAS	MILLION CUBIC FEET
SOLID WASTE	COMM-INST	AUX.FUEL/NO EMSNS	LPG	1000 GALLONS
SOLID WASTE	COMM-INST	AUX.FUEL/NO EMSNS	OTHER/NOT CLASIFD	MILLION CUBIC FEET
SOLID WASTE	COMM-INST	AUX.FUEL/NO EMSNS	OTHER/NOT CLASIFD	1000 GALLONS
SOLID WASTE	COMM-INST	AUX.FUEL/NO EMSNS	OTHER/NOT CLASIFD	TONS
SOLID WASTE	INDUSTRIAL	INCINERATOR	MULTIPLE CHAMBER	TONS BURNED
SOLID WASTE	INDUSTRIAL	INCINERATOR	SINGLE CHAMBER	TONS BURNED
SOLID WASTE	INDUSTRIAL	INCINERATOR	CONTROLLED AIR	TONS BURNED
SOLID WASTE	INDUSTRIAL	INCINERATOR	CONICAL REFUSE	TONS BURNED
SOLID WASTE	INDUSTRIAL	INCINERATOR	CONICAL WOOD	TONS BURNED
SOLID WASTE	INDUSTRIAL	INCINERATOR	OPEN PIT	TONS OF WASTE

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                           SCC CATEGORY NAMES
                           ******************
      I                 II                 III                  IV                     UNITS

SOLID WASTE      |INDUSTRIAL        |OPEN BURNING      |WOOD                |TONS BURNED
SOLID WASTE      |INDUSTRIAL        |OPEN BURNING      |REFUSE              |TONS BURNED
SOLID WASTE      |INDUSTRIAL        |OPEN BURNING      |AUTO BODY COMPTS    |TONS BURNED
SOLID WASTE      |INDUSTRIAL        |AUTO BODY INCINAT|W/O AFTERBURNER     |AUTOS BURNED
SOLID WASTE      |INDUSTRIAL        |AUTO BODY INCINAT|W/ AFTERBURNER      |AUTOS BURNED
SOLID WASTE      |INDUSTRIAL        |RAIL CAR BURNING |OPEN                |CARS BURNED
SOLID WASTE      |INDUSTRIAL        |INCINERATOR      |SLUDGE              |TONS DRY SLUDGE
SOLID WASTE      |INDUSTRIAL        |INCINERATOR      |OTHER/NOT CLASIFD|TONS BURNED
SOLID WASTE      |INDUSTRIAL        |AUX.FUEL/NO EMSNS|RESIDUAL OIL        |1000 GALLONS
SOLID WASTE      |INDUSTRIAL        |AUX.FUEL/NO EMSNS|DISTILLATE OIL      |1000 GALLONS
SOLID WASTE      |INDUSTRIAL        |AUX.FUEL/NO EMSNS|NATURAL GAS         |MILLION CUBIC FEET
SOLID WASTE      |INDUSTRIAL        |AUX.FUEL/NO EMSNS|PROCESS GAS         |MILLION CUBIC FEET
SOLID WASTE      |INDUSTRIAL        |AUX.FUEL/NO EMSNS|L P G               |1000 GALLONS
SOLID WASTE      |INDUSTRIAL        |AUX.FUEL/NO EMSNS|OTHER/NOT CLASIFD|MILLION CUBIC FEET
SOLID WASTE      |INDUSTRIAL        |AUX.FUEL/NO EMSNS|OTHER/NOT CLASIFD|1000 GALLONS
SOLID WASTE      |INDUSTRIAL        |AUX.FUEL/NO EMSNS|OTHER/NOT CLASIFD|TONS

   Other            Lab            Other        Not          Specify in Remarks
                  Analysis                   Classified
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APPENDIX C

SAROAD POLLUTANT CODES

	CODE**
General	1
Particulate (total)	1101
Organic (total) fraction	1102
Benezene soluble organic fraction	1103
Polynuclear hydrocarbons (heterocyclic)	1104
Water soluble organics	1105
Aliphatic fraction	1110
Aromatic fraction	1111
Inorganic fraction	1113
Hydrocarbon fraction	1114
Aldehyde fraction	1115
Organic acid fraction	1116
Inorganic	2
Total Element (free and combined)	21
Aluminum	2101
Antimony	2102
Arsenic	2103
Argon	2104
Beryllium	2105
Bismuth	2106
Barium	2107
Boron	2108

**These codes are identical to the last 4 digits of the SAROAD pollutant codes for suspended, respirable, and settled particulates, found in the SAROAD PARAMETER CODING MANUAL (APTD-0633).

SAROAD POLLUTANT CODES

CHEMICAL POLLUTANT	CODE
Bromine	2109
Cadmium	2110
Calcium	2111
Chromium	2112
Cobalt	2113
Copper	2114
Chlorine	2115
Carbon	2116
Cerium	2117
Cesium	2118
Dysprosium	2119
Erbium	2120
Europium	2121
Fluorine	2122
Gadolinium	2123
Gallium	2124
Germanium	2125
Iron	2126
Hafnium	2127
Lead	2128
Holmium	2129
Hydrogen	2130
Indium	2131
Manganese	2132
Iridium	2133
Molybdenum	2134

Krypton	2135
Nickel	2136
Helium	2137
Lithium	2138
Lutetium	2139
Magnesium	2140
Iodine	2141
Mercury	2142
Gold	2143
Neodymium	2144
Neon	2145
Lanthanum	2146
Niobium	2147
Nitrogen	2148
Osmium	2149
Oxygen	2150
Palladium	2151
Phosphorus	2152
Platinum	2153
Selenium	2154
Praseodymium	2155
Protactinium	2156
Radium	2157
Rhenium	2158
Rhodium	2159

Tin	2160
Titanium	2161
Samarium	2162
Scandium	2163
Vanadium	2164
Silicon	2165
Silver	2166
Zinc	2167
Strontium	2168
Sulfur	2169
Tantalum	2170
Tellurium	2171
Terbium	2172
Thallium	2173
Thorium	2174
Thulium	2175
Rubidium	2176
Ruthenium	2177
Tungsten	2178
Uranium	2179
Potassium	2180
Xenon	2181
Ytterbium	2182
Yttrium	2183
Sodium	2184
Zirconium	2185

Group VII Compounds and Ions	22
Bromide ion	2201
Fluoride ion	2202
Chloride ion	2203
Iodide ion	2204
Chlorate ion	2205
Perchlorate ion	2206
Bromate ion	2207
Sodium chloride	2210
Potassium chloride	2211
Calcium chloride	2212
Ammonium chloride	2213
Aluminum chloride	2214
Sodium bromide	2230
Potassium bromide	2231
Sodium iodide	2250
Potassium iodide	2251
Potassium fluoride	2270
Sodium fluoride	2271
Sodium fluorosilicate	2275
Calcium fluorosilicate	2276
Group V Compounds and Ions	23
Ammonium ion	2301
Cyanide ion	2304
Nitrate ion	2306
Nitrite ion	2309

Hydrazine	2310
Hydrazoic acid	2311
Ammonium chloride	2320
Ammonium nitrate	2321
Ammonium sulfate	2322
Phosphoric acid	2340
Calcium phosphate	2341
Phosphorous pentasulfide	2342
Phosphorus pentoxide	2343
Phosphate ion	2345
Hydrogen phosphate ion	2346
Dihydrogen phosphate ion	2347
Group VI Compounds and Ions	24
Sulfide ion	2401
Sulfuric acid	2402
Sulfate ion	2403
Thiosulfate ion	2404
Sulfite ion	2410
Ferrous sulfide	2411
Ferric sulfide	2412
Ferrous sulfate	2413
Ferric sulfate	2414
Barium sulfate	2415
Chromium trioxide	2417
Sodium dichromate	2418
Zinc oxide	2430
Aluminum oxide	2431
Water	2450

Group IV Compounds and Ions	25
Carbonate ion	2501
Bicarbonate ion	2502
Carbon boride	2510
Silicon carbide	2511
Silicate ion	2550
Silicon dioxide	2551
Acids and Bases	26
Total acidity H+	2601
Hydrogen ion concentration pH	2602
Nitric acid	2605
Hydrochloric acid	2606
Total alkalinity	2650
Hydroxide ion concentration	2651
Calcium hydroxide	2653
Organo-Metallic Compounds and Ions	27
Miscellaneous	28
Aliphatic Compounds	6
Gross Hydrocarbons	61
Hydrocarbons	62
Heptane	6201
Octane	6202
Nonane	6203
Decane	6204
Undecane	6205
Dodecane	6206

Tridecane	6207
Tetradecane	6208
Pentadecane	6209
Hexadecane	6210
Heptadecane	6211
Octadecane	6212
Nonadecane	6213
Eicosane	6214
Hemeicosane	6215
Docosane	6216
Tricosane	6217
Tetracosane	6218
Pentacosane	6219
Hexacosane	6220
Heptacosane	6221
Octacosane	6222
Cyclohexane	6223
Cycloheptane	6224
Cyclooctane	6225
Heptene-1	6226
Octene-1	6227
Alcohols and Ethers	63
Butyl alcohol	6301
iso-butyl alcohol	6302
sec-butyl alcohol	6303
tert-butyl alcohol	6304

n-amyl alcohol	6305
iso-amyl alcohol	6306
tert-amyl alcohol	6307
n-hexyl alcohol	6308
Cyclohexanol	6309
n-octyl alcohol	6310
Capryl alcohol (octanol-2)	6311
Decyl alcohol	6312
Lauryl alcohol	6313
Myristyl alcohol	6314
Cetyl alcohol	6315
Stearyl alcohol	6316
Di-*n*-butyl ether	6340
Di-*n*-amyl ether	6341
Di-*iso*-amyl ether	6342
Di-*n*-hexyl ether	6343
Di-chloromethyl ether	6344
Di-(β-chloroethyl) ether	6346
Ethylene glycol dimethyl ether	6347
Divinyl ether	6348
Diallyl ether	6349
Carboxylic Acids and Esters	64
Propionic acid	6401
N-butyric acid	6402
iso-bytyric acid	6403
n-valeric acid	6404

Trimethylacetic acid	6405
Caproic acid	6406
n-heptylic acid	6407
Caprylic acid	6408
Pelargonic acid	6409
Fluoroacetic acid	6410
Chloroacetic acid	6411
Bromoacetic acid	6412
Iodoacetic acid	6413
Dichloroacetic acid	6414
Trichloroacetic acid	6415
α-chloropropionic acid	6416
β-chloropropionic acid	6417
Glycolic acid	6418
Lactic acid	6419
Methoxyacetic acid	6420
Thioglycolic acid	6421
Cyanoacetic acid	6422
Glyoxylic acid	6423
Acrylic acid	6425
Vinylacetic acid	6426
Pheynlacetic acid	6427
Formic acid	6428
Acetic acid	6429
Crotonic acid	6430
Oxalic acid	6431

Malonic acid	6432
Succinic acid	6433
Glutaric acid	6434
Adipic acid	6435
Pimelic acid	6436
Suberic acid	6437
Azelaic acid	6438
Sebacic acid	6439
Aldehydes and Ketones	65
Caproaldehyde	6501
Heptaldehyde	6502
Hexanone-2	6504
Hexanone-3	6505
Di-*n*-propyl ketone	6506
Di-*iso*-propyl ketone	6507
Di-*iso*-butyl ketone	6508
Di-*n*-amyl ketone	6509
Stearone	6510
Chloroacetone	6511
Dichloroacetone	6512
Acetylacetone	6513
Mesityl oxide	6514
Phorone	6515
Cyclohexanone	6516
Acrolein	6517

Other Oxygen Compounds	66
Nitrogen Compounds	67
Tri-*n*-propylamine	6701
Hexylamine	6702
Laurylamine	6703
Trimethylenediamine	6704
Tetramethylenediamine	6705
Pentamethylenediamine	6706
Hexamethylenediamine	6707
Ethanolamine	6708
Diethanolamine	6709
Triethanolamine	6710
Acrylonitrile	6711
Halogen Compounds	68
Methylene iodide	6801
Bromoform	6802
Carbon tetrabromide	6803
Ethylene dibromide	6804
1,1-dibromoethane	6805
1,1,2,2-tetrachloroethane	6806
Hexachloroethane	6807
1,3-dibromopropane	6808
1,4-dibromobutane	6809
1,5-dibromopentane	6810
1,6-dibromohexane	6811

Miscellaneous	69
Aromatic Compounds	7
Simple and Gross Hydrocarbons	71
Benzene	7101
Toluene	7102
Ethylbenzene	7103
n-propylbenzene	7104
iso-propylbenzene	7105
n-butylbenzene	7106
sec-butylbenzene	7107
tert-butylbenzene	7108
Styrene	7109
Allylbenzene	7110
o-xylene	7111
m-xylene	7112
p-xylene	7113
o-ethyltoluene	7114
m-ethyltoluene	7115
p-ethyltoluene	7116
p-cymene	7117
o-diethylbenzene	7118
m-diethylbenzene	7119
p-diethylbenzene	7120
1,2,3-trimethylbenzene (hemimellitene)	7121
1,2,4-trimethylbenzene (pseudocumene)	7122
1,3,5-trimethylbenzene (mesitylene)	7123

1,2,3,4-tetramethylbenzene (prehnitene)	7124
1,2,3,5-tetramethylbenzene (isodurene)	7125
1,2,4,5-tetramethylbenzene (durene)	7126
Pentamethylbenzene	7127
Hexamethylbenzene	7128
1,3,5-triethylbenzene	7129
Diphenylmethane	7131
Triphenylmethane	7132
Tetraphenylmethane	7133
Stilbene	7134
1,1-diphenylethane	7135
1,2-diphenylethane	7136
Diphenyl	7137
p-terphenyl	7138
p-quaterphenyl	7139
1,3,5-triphenylbenzene	7140
Naphtalene	7141
α-methylnaphthalene	7142
β-methylnaphthalene	7143
Indene	7145
Azulene	7146
Acenaphthene	7147
Acenaphthalene	7148
Fluorene	7149
Phenanthrene	7150
Anthracene	7151
2-methylanthracene	7152

Complex Hydrocarbons	72
Fluoranthene	7201
8-methylfluoranthese	7202
Pyrene	7204
1-methylpyrene	7205
4-methylpyrene	7206
2,7-dimethylpyrene	7207
Chrysene	7208
Anthanthrene	7210
Coronene	7211
Perylene	7212
Naphthacene	7213
Benzo(c)phenanthrene	7214
Benzo(a)anthracene	7215
11-h Benzo(b)fluorene	7216
11-h Benzo(a)fluorene	7217
7-h Benzo(c)fluorene	7218
Dibenzo(a,i)fluorene	7219
Benzo(b)fluoranthene	7220
Benzo(g,h,i)fluoranthene	7221
Benzo(j)fluoranthene	7222
Benzo(k)fluoranthene	7223
Benzo(e)pyrene	7224
Naphtho(2,3-a)pyrene	7226
Dibenzo(a,e)pyrene	7227
Dibenzo(a,i)pyrene	7228

Dibenzo(a,h)pyrene	7229
Dibenzo(b,h)phenanthrene	7230
Dibenzo(a,h)anthracene	7231
Tribenzo(a,c,h)anthracene	7232
Benzo(a)naphthacene	7233
Dibenzo(a,l)naphthacene	7234
Dibenzo(a,j)naphthacene	7235
Dibenzo(a,c)naphthacene	7236
Benzo(g,h,i)perylene	7237
Dibenzo(b,p,g,r)perylene	7238
Benzo(a)pyrene	7242
Phenols and Ethers	73
o-cresol	7301
m-cresol	7302
p-cresol	7303
o-chlorophenol	7304
m-chlorophenol	7305
p-chlorophenol	7306
o-bromophenol	7307
m-bromophenol	7308
p-bromophenol	7309
O-nitrophenol	7310
m-nitrophenol	7311
p-nitrophenol	7312
2,4-dinitrophenol	7313
3,5-dinitrophenol	7314

Resorcinol	7315
Hydroquinone	7316
Catechol	7317
Pyrogallol	7318
Phloroglucinol	7319
Anisole	7340
Phenetole	7341
Diphenyl ether	7342
o-anisidine	7343
p-anisidine	7344
Carboxylic Acids and Esters	74
Aldehydes and Ketones	75
Xanthen-9-one	7501
7h-benzo(d,e)anthracene-7-one(benzanthrone)	7502
Phenalen-1-one	7503
Other Oxygen Compounds	76
Nitrogen Compounds	77
Aniline	7701
o-phenylenediamine	7702
m-phenylenediamine	7703
p-phenylenediamine	7704
o-anisidine	7705
p-anisidine	7706
o-chloroaniline	7707
m-chloroaniline	7708
p-chloroaniline	7709

o-toluidine	7710
m-toluidine	7711
p-toluidine	7712
Diphenylamine	7713
Triphenylamine	7714
Benzidine	7715
Halogen Compounds	78
Miscellaneous	79
Heterocyclic Compounds	8
Nitrogen Compounds	81
Pyridine	8101
α-picoline	8102
β-picoline	8103
γ-picoline	8104
Quinoline	8105
Isoquinoline	8106
Quinaldine	8107
Indole	8108
Acridine	8109
Carbazole	8110
Benzo(f)quinoline	8111
Benzo(h)quinoline	8112
Phenanthridine	8113

Benz(a)acridine	8114
Benz(c)acridine	8115
11h-benzo(a)carbazole	8116
5h-benzo(b)carbazole	8117
7h-benzo(b)carbazole	8118
Dibenz(a,b)acridine	8119
Dibenz(a,j)acridine	8120
Benzo(l,m,n)phenanthridine	8121
Indeno(1,2,3-i,j)isoquinoline	8122
9-acridanone	8123
Oxygen Compounds	82
Benzofuran	8201
Dibenzofuran	8202
Furfural	8203
Sulfur Compounds	83
Nitrogen and Oxygen Compounds	84
Sulfur and Oxygen Compounds	85
Sulfur and Nitrogen Compounds	86
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APPENDIX D

SAMPLE COMPLETED DATA INPUT SHEETS

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A - SOURCE DESCRIPTION

Test Series No. (1-5)	Sub Series No. (6-8)	Run No. (9-10)	Card No. (11-13)	SCC I (16-32)	SCC II (33-49)	SCC III (50-66)	Test Series Start Date Mo (67-68)	Start Date Da (69-70)	Start Date Yr (71-72)	Finish Date Mo (73-74)	Finish Date Da (75-76)	Finish Date Yr (77-78)	UTM Zone (79-80)
19	1	1	A01	EXTCOMB BOILER	ELECTRIC GENERATN	SOLID WASTE/COAL	12	04	73	12	14	73	15

Card No. (11-13)	SCC IV (16-35)	Site Name (36-75)
A02	G.T. 100MMBTU/HR	MERMACK PLANT

Card No. (11-13)	Source Name (16-40)	Street (41-60)	City (61-78)	State (79-80)
A03	BOILER UNIT 1	8200 FINE ROAD	ST. LOUIS	MO

Card No. (11-13)	Zip (16-20)	UTM Coords X (21-24)	UTM Coords Y (25-29)	Tested By (31-80)
A04	63120	7250	4750	MIDWEST RESEARCH INST., KANSAS CITY, MO.

Card No. (11-13)	Reference (16-75)
A05	SHANNON, L.J., ET AL., EPA-650/2-74-073, AUG. 74

B - TEST SERIES REMARKS

Test Series No. (1-5)	Sub Series No. (6-8)	Run No. (9-10)	Card No. (11-13)	Remarks in Text (16-80)
19	1	1	B01	IMPACTOR CUT POINTS COMPUTED FROM RANZ AND WONG THEORY
			B02	
			B03	
			B04	
			B05	
			B06	
			B07	
			B08	
			B09	
			B10	

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C - CONTROL DEVICE(S) CHARACTERISTICS

Test Series No. (1-5)	Sub Series No. (6-8)	Run No. (9-10)	Card No. (11-13)	Device No. (1,2 or 3) (14)	(15)	Device Category (16-48)	Device Class (49-61)	Generic Type (62-80)
19	1	1	C01	1		PARALLEL PLATE ESP	CØNVENTIØNAL	ESP

Card No. (11-13)	(14)	(15)	Commercial Name (16-45)	Manufacturer (46-75)	(76-80)
C02	1		ELECTRØSTATIC PRECIPITATØR	RESEARCH CØTTRELL	

Card No. (11-13)	(14)	(15)	Device Description (16-75)	(76-80)
C03	1		2-UNITS IN PARALLEL WITH CØMMØN INLET DUCT AND SEPARATE ØUT-	

Card No. (11-13)	(14)	(15)	Device Description (continued) (16-75)	(76-80)
C04	1		LET DUCTS	

CONTROL DEVICE(S) DESIGN AND OPERATING PARAMETERS

Test Series No. (1-5)	Sub Series No. (6-8)	Run No. (9-10)	Card No. (11-13)	Device No. (1,2 or 3) (14)	Design or Operating Parameter (D or Ø) (15)	Specification (16-45)	Value (46-65)	Serial No. (66-67)	(68-80)
19	1	1	C05	1	D	ELECTRØDE AREA	5174.5 M2	1	
			C05	1	D	CØRØNA WIRE DIA.	2.8 MM	2	
			C05	1	D	PLATE TØ PLATE SPACING	238 MM	3	
			C05	1	Ø	VØLUMETRIC FLØW RATE	230.1 M3/S	1	
			C05	1	Ø	APPLIED VØLTAGE	32 KV	2	
			C05	1	Ø	CØRØNA CURRENT	253 MAMP	3	
			C05	1	Ø	PØWER	8 KW	4	
			C05	1	Ø	SPARK RATE	115/MIN	5	
			C05						
			C05						
			C05						
			C05						
			C05						
			C05						
			C05						
			C05						
			C05						
			C05						
			C05						
			C05						

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D - TEST CHARACTERISTICS

Test Series No.	Sub Series No.	Run No.	Card No.		Control Device Inlet or Outlet (I or O)	Test Sub Series Date Mo	Da	Yr	Start Time	Stop Time	Source Operating Mode*	Source Operating Rate*	
1 2 3 4 5	6 7 8	9 10	11 12 13	14	15	16 17	18 19	20 21	22 23 24 25	26 27 28 29	30–59	60–79	80
19	1	1	D01	:	I	12	04	73	0830	1100	COAL+REFUSE BURNING	120 MN	

Card No.			Feed Material*	Feed Material Composition*
11 12 13	14	15	16–45	46–80
D02			ORIENT 6 COAL AND MUN. REFUSE	9% REFUSE

Card No.			Sampling Location Description*	Volume Flow Rate*	Velocity*	Temp.*	Press.*	% H_2O*	% Iso Kinetic*
11 12 13	14	15	16–55	56–61	62–65	66–69	70–74	75–77	78–80
D03			ABOUT 2M FROM BEND (RAD. OF CURV. =2.3M)	169‸	20‸4	164	760	85	100

Card No.			CO_2*	CO*	O_2*	N_2*	Trace Gases in ppm (Text)*
11 12 13	14	15	16–19	20–23	24–27	28–31	32–80
D04			145	‸01	65	79‸	SO2=900, SO3=0, NO=220

Card No.			Sub Series Remarks*
11 12 13	14	15	16–80
D05			
D06			
D07			
D08			
D09			
D10			

E - PARTICULATE MASS TRAIN RESULTS

Test Series No.	Sub Series No.	Run No.	Card No.			Front Half	Total	Mass Train Comments (Text)
1 2 3 4 5	6 7 8	9 10	11 12 13	14	15	16–25	26–35	36–80
19	11		E01			5•21 E+05	4•78 E+06	EPA METHOD 5 TRAIN

F - PARTICULATE PHYSICAL PROPERTIES

Test Series No.	Sub Series No.	Run No.	Card No.			Density*	Determination	Resistivity*	Determination			Other Physical Properties in Text*
1 2 3 4 5	6 7 8	9 10	11 12 13	14	15	16 17 18 19	20	21–27	28	29	30	31–80
19	1	1	F01			2‸27	1	2•3 +110	0			

*/ Need not be filled if the preceding subseries contains the same data.

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G - PARTICULATE BIO ASSAY DATA

Test Series No.	Sub Series No.	Run No.	Card No.	Bio Assay Test Type	Bio Assay Comments
			G01		
			G01		
			G01		
			G01		
			G01		

H - CHEMICAL COMPOSITION

Test Series No.	Sub Series No.	Run No.	Card No.	Chemical I. D.	Analysis I.D.	Filter/Total	Greater Than 10.0	10.0 - 1.0	1.0 - 0.1	0.1 - 0.01	Less Than 0.01
19	1	1	H01	210[illegible]	A		21	21	6.60		
			H01	2110	A		180	380	50.5		
			H01	2112	A		1210	4234	310		
			H01	2113	A		92	120	7.0		
			H01	2114	A		240	977	300		
			H01	212[illegible]	A		42.6	62.3	1.42		
			H01	2132	A		566	1030	66.8		
			H01	213[illegible]	A		1430	3876	103		
			H01	217[illegible]	A		11	12	2.00		
			H01	2173	A		3.8	8.2	4.1		
			H01	2166	A		13	27.4	4.21		
			H01	2164	A		1430	2290	175		
			H01	2167	A		1350	4659	432		
			H01	2111	A		73000	130000	11100		
			H01	212[illegible]	A		426000	623000	14200		
			H01								
			H01								
			H01								
			H01								
			H01								
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I - MEASUREMENT PARTICULARS

Test Series No.	Sub Series No.	Run No.	Card No.		Measurement Instrument/Method No. / Measurement Instrument/Method Name **	Size Range ** Lower	Size Range ** Upper	Collection Surface/Substrate **	Dilution Factor **
19	1	1	I 0 1	1	BRINKS BMS-II	.1	15.	STAINLESS STEEL	1.

Card No.		Meas. Start Time	Sampling Period **	Aerosol Flow Rate **	Gas Conditions at Measurement Location: Temp. **	Press. **	% H_2O **	Comments on the Measurement **
I 0 2	1	0830	15.	187	164	760	9.7	

Card No.	Comments on the Measurement (continued)
I 0 3	

J - PARTICULATE SIZE DISTRIBUTION DATA

Test Series No.	Sub Series No.	Run No.	Card No.		Aerodynamic/Stokes Diameter (1 or 0)	Particle Size Data **							
19	1	1	J 0 1	1	1	15.	7.5	3.807	2.299	1.545	.79	.409	.1
			J 0 2			.	.	.	.	.	.	.	.
			J 0 3			.	.	.	.	.	.	.	.

Card No.		Mass/Number (1 or 0)	Mass/Number Data ±	±	±	±	±	±	±	±
J 0 4	1	1	2.999+5	1.130+5	9.343+4	4.564+4	2.781+4	8.202+3	1.854+4	.
J 0 5			.	.	.	.	.	.	.	.
J 0 6			.	.	.	.	.	.	.	.

**' Need not be filled if the preceding subseries or run with this instrument contains the same data.

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I - MEASUREMENT PARTICULARS

Test Series No. (1-5)	Sub Series No. (6-8)	Run No. (9-10)	Card No. (11-13)	14	15	Measurement Instrument/Method No. / Measurement Instrument/Method Name** (16-45)	Size Range** Lower (46-50)	Size Range** Upper (51-55)	Collection Surface/Substrate** (56-75)	Dilution Factor** (76-80)
19	1	2	I01							

Card No. (11-13)	14	15	Meas. Start Time (16-19)	Sampling Period** (20-24)	Aerosol Flow Rate** (25-30)	Gas Conditions at Measurement Location: Temp.** (31-34)	Press.** (35-39)	% H2O** (40-42)	43-45	Comments on the Measurement** (46-80)
I02	1		1930	20		158		9.		

Card No. (11-13)	14	15	Comments on the Measurement (continued) (16-80)
I03			

J - PARTICULATE SIZE DISTRIBUTION DATA

Test Series No. (1-5)	Sub Series No. (6-8)	Run No. (9-10)	Card No. (11-13)	14	15 Aerodynamic/Stokes Diameter (1 or 0)	Particle Size Data** (16-23)	(24-31)	(32-39)	(40-47)	(48-55)	(56-63)	(64-71)	(72-79)	80
19	1	2	J01											
			J02											
			J03											

Card No. (11-13)	14	15 Mass/Number (1 or 0)	Mass/Number Data (16-23)	(24-31)	(32-39)	(40-47)	(48-55)	(56-63)	(64-71)	(72-79)	80
J04	1	1	2.497+6	4.783+5	1.469+5	4.208+4	3.455+3	0	8.794+3		
J05											
J06											

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D - TEST CHARACTERISTICS

Test Series No. (1–5)	Sub Series No. (6–8)	Run No. (9–10)	Card No. (11–13)	14	Control Device Inlet or Outlet (1 or 0) (15)	Test Sub Series Date Mo (16–17)	Da (18–19)	Yr (20–21)	Start Time (22–25)	Stop Time (26–29)	Source Operating Mode * (30–59)	Source Operating Rate * (60–80)
19	2	1	D01		0	12	04	73	0840	1100		

Card No. (11–13)	14	15	Feed Material * (16–45)	Feed Material Composition * (46–80)
D02				

Card No. (11–13)	14	15	Sampling Location Description * (16–55)	Volume Flow Rate * (56–61)	Velocity * (62–65)	Temp. * (66–69)	Press. * (70–74)	% H2O * (75–77)	% Iso Kinetic * (78–80)
D03			SAMPLING PORTS IMMEDIATELY BEHIND AN ELB	1417	157	166			

Card No. (11–13)	14	15	CO_2 * (16–19)	CO * (20–23)	O_2 * (24–27)	N_2 * (28–31)	Trace Gases in ppm (Text) * (32–80)
D04							

Card No. (11–13)	14	15	Sub Series Remarks * (16–80)
D05	1	0	VOLUMETRIC FLOW RATE= 230.1 M3/S
D06	1	0	APPLIED VOLTAGE= 32 KV
D07	1	0	CORONA CURRENT= 253 MAMP
D08	1	0	POWER= 8 KW
D09	1	0	SPARK RATE= 115/MIN
D10			

E - PARTICULATE MASS TRAIN RESULTS

Test Series No. (1–5)	Sub Series No. (6–8)	Run No. (9–10)	Card No. (11–13)	14	15	Front Half (16–25)	Total (26–35)	Mass Train Comments (Text) (36–80)
19	2	1	E01			1.34 E+04	2.067 E+05	

F - PARTICULATE PHYSICAL PROPERTIES

Test Series No. (1–5)	Sub Series No. (6–8)	Run No. (9–10)	Card No. (11–13)	14	15	Density * (16–19)	20	Resistivity * (21–27)	Determination (28)	29	30	Other Physical Properties in Text * (31–80)
19	2	1	F01					2.4 +11	0			

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DATA INPUT FORMS

I - MEASUREMENT PARTICULARS

Test Series No. (1 2 3 4 5)	Sub Series No. (6 7 8)	Run No. (9 10)	Card No. (11 12 13)	14	15	—Measurement Instrument/Method No. Measurement Instrument/Method Name ** (16–45)	Size Range ** Lower (46–50)	Size Range ** Upper (51–55)	Collection Surface/Substrate ** (56–75)	Dilution Factor ** (76–80)
19	2	1	I 0 1	2		ANDERSEN MODEL IV	.1	15	GLASS FIBER FILTER	1

Card No. (11 12 13)	14	15	Meas. Start Time (16–19)	Sampling Period ** (20–24)	Aerosol Flow Rate ** (25–30)	Gas Conditions at Measurement Location ** Temp ** (31–34)	Press ** (35–39)	% H_2O (40–42)	43 44 45	Comments on the Measurement ** (46–80)
I 0 2	2		0840	20	20.22	166	760	85		IMPACTOR OPERATED HORIZONTALLY

Card No. (11 12 13)	14	15	Comments on the Measurement (continued) (16–80)
I 0 3			

J - PARTICULATE SIZE DISTRIBUTION DATA

Test Series No. (1 2 3 4 5)	Sub Series No. (6 7 8)	Run No. (9 10)	Card No. (11 12 13)	14	15	—Aerodynamic/Stokes Diameter (1 or 0) (16–23)	(24–31)	(32–39)	Particle Size Data ** (40–47)	(48–55)	(56–63)	(64–71)	(72–79)	80
19	2	1	J 0 1	2	1	15.00	11.5	7.18	4.86	3.31	2.12	1.06	.65	
			J 0 2			0.44	.1	.	.	.	.	.	.	
			J 0 3			.	.	.	.	.	.	.	.	

Card No. (11 12 13)	14	15	—Mass/Number (1 or 0) (16–23)	(24–31)	(32–39)	Mass/Number Data (40–47)	(48–55)	(56–63)	(64–71)	(72–79)	80
J 0 4	2	1	1.476+4	1.387+4	1.582+4	9.097+3	1.433+4	1.508+4	4.253+3	2.397+3	
J 0 5			4.75 +3	.	.	.	.	.	.	.	
J 0 6			.	.	.	.	.	.	.	.	

**/ Need not be filled if the preceding subseries or run with this instrument contains the same data.

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STATIONARY POINT SOURCE
FINE PARTICULATE EMISSION INFORMATION SYSTEM
DATA INPUT FORMS

Form Prepared by

I - MEASUREMENT PARTICULARS

Test Series No.	Sub Series No.	Run No.	Card No.		Measurement Instrument/Method No. / Measurement Instrument/Method Name **	Size Range ** Lower	Size Range ** Upper	Collection Surface/Substrate **	Dilution Factor **
19	2	2	I01	3	CLIMET MODEL CL-208 OPC	.65	15		1

Card No.		Meas. Start Time	Sampling Period **	Aerosol Flow Rate **	Gas Conditions at Measurement Location: Temp. **	Press. **	% H2O **		Comments on the Measurement **
I02	3	0930	1	708	25	760	12		PARTICLE DIA. ARE EQUIVALENT STOKES

Card No.		Comments on the Measurement (continued)
I03		DIA. DETERMINED FROM SEDIMENTATION VELOCITIES

J - PARTICULATE SIZE DISTRIBUTION DATA

Test Series No.	Sub Series No.	Run No.	Card No.		Aerodynamic/Stokes Diameter (1 or 0)	Particle Size Data **							
19	2	2	J01	3	0	1.5	1.03	.85	.65	.	.	.	.
			J02			.	.	.	.	.	.	.	.
			J03			.	.	.	.	.	.	.	.

Card No.		Mass/Number (1 or 0)	Mass/Number Data ±	±	±	±	±	±	±	±
J04	3	0	2.76 +2	4.002+3	1.077+4	.	.	.	.	.
J05			.	.	.	.	.	.	.	.
J06			.	.	.	.	.	.	.	.

**/ Need not be filled if the preceding subseries or run with this instrument contains the same data.

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STATIONARY POINT SOURCE
FINE PARTICULATE EMISSION INFORMATION SYSTEM
DATA INPUT FORMS

Form Prepared by

I - MEASUREMENT PARTICULARS

Test Series No.	Sub Series No.	Run No.	Card No.		Measurement Instrument/Method No. / Measurement Instrument/Method Name**	Size Range** Lower	Size Range** Upper	Collection Surface/Substrate**	Dilution Factor**
19	2	3	I01	4	CN COUNTER/DIFF. BATTERY	.01	2		1

Card No.		Meas. Start Time	Sampling Period**	Aerosol Flow Rate **	Gas Conditions at Measurement Location ** Temp **	Press **	% H2O	Comments on the Measurement**
I02	4	1040						RECTANGULAR CHANNEL BATTERY

Card No.		Comments on the Measurement (continued)
I03		

J - PARTICULATE SIZE DISTRIBUTION DATA

Test Series No.	Sub Series No.	Run No.	Card No.	Aerodynamic/Stokes Diameter (1 or 0)	Particle Size Data**								
19	2	3	J01	40	.172	.103	.064	.014	.008	.	.	.	.
			J02		.	.	.	.	.	.	.	.	.
			J03		.	.	.	.	.	.	.	.	.

Card No.	Mass/Number (1 or 0)	Mass/Number Data	±		±		±		±		±		±		±		±
J04	40	2.5	+5	4.2	+5	5.6	+5	1.4	+5	.		.		.		.	
J05		.		.		.		.		.		.		.		.	
J06		.		.		.		.		.		.		.		.	

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**/ Need not be filled if the preceding subseries or run with this instr[illegible] contains the same data.